# Economic, Political, and Bureaucratic Factors Influencing a Public Agency's Contract Decisions

by

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# ECONOMIC, POLITICAL, AND BUREAUCRATIC FACTORS INFLUENCING A PUBLIC AGENCY'S CONTRACT DECISIONS

BY

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This thesis is dedicated to my wife, Judy, and my children, Katie and Julie, without whose love, support, and encouragement this dissertation would never have been accomplished.
This thesis is also dedicated to my mother, Eva, and my mother-in-law, Francis Shafel, whose love and support for my family throughout the years made this thesis possible.

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## SUMMARY

This thesis focuses on government purchasing and contract distribution in varying political climates. It takes the reader inside a puzzling bureaucratic realm to investigate who the public agency purchasing process serves: the public, the contractors, or special political interests. The thesis probes and searches for proof of political influence in the awarding of contracts and investigates the distributive effects of a public agency's contract decisions in order to answer the question: "Who wins government contracts and why?".

A multivariate regression model is developed to provide an in-depth analysis of the economic and political factors that may influence government officials when they make contract award decisions. A general research model is used to investigate two competing explanations: (1) the policy model where the low-bidder wins the contract or (2) the self-interest model where a politically favored contractor wins the contract. Twenty-one variables are used to measure the influence of the policy model's five economic factors: financial aspects of the firm and contract, low-bid position, price and CPI, competition, and the firm's pricing tactics. Twenty-seven variables are used to measure the influence of the self-interest model's five political factors: ward location, political value of era, change in elected

and appointed officials, administrative review time, and contract justification.

The general research model explains change in contractor, incumbent versus challenger, for a sample of 800 annual-order contracts awarded by the Chicago Transit Authority from 1981 to 1992. The period includes four different city of Chicago mayors: Byrne, Washington, Sawyer, and Daley. Two scenarios are used to describe the joint influence of both the policy and self-interest models. Scenario A describes the circumstances under which the incumbent contractor will win a consecutive annual-order contract, and Scenario B describes the circumstances under which the challenger will win an annual-order contract. The model's foundation is developed from several disciplines: government procurement, distributive politics and urban politics, normative expectations of political and bureaucratic actors, and cozy relationships expressed as consensus and conflict among the actors.

The general research model is also used to analyze the agency's contract decisions under twelve other contracting circumstances. The sample is divided into seven different contract pools that represent contracts issued during each of the four mayors' term and three types of private firms: Chicago-based firms, DBE firms, and small firms with sales of less than

$250,000 to the agency. Besides the pool analysis, a micro-analysis of mayoral influence in the agency's contracting process is used to analyze the agency's contract decisions under six additional contracting circumstances. The micro-analysis compares the influence of each mayor with the average influence exercised by the other three mayors and the influence of the transition between mayors with their mayoral term.

The general research model revealed that political influence was selective rather than systemic, and that the following four relationships explained change in contractor: firm size explained 6%; price and market competition explained 38%; administrative discretion explained 8%; and selective economic and political intervention explained up to 20%.

# I. INTRODUCTION

## A. Background

This thesis focuses on government purchasing and contract distribution in varying political climates. It takes the reader inside a puzzling bureaucratic realm to investigate who the public agency purchasing process serves: the public, the contractors, or special political interests. The thesis probes and searches for proof of political influence in the awarding of contracts as a function of the type of contractor. The thesis asks whether the general public realizes the greatest benefit from these contracts or whether contractors and other special interests influence the contracting process to their benefit. In order to identify who realizes the greatest benefit, this thesis studies the ongoing dynamics of strategic interaction among privately owned firms, a federally-funded government agency serving a major metropolitan city, and the agency's actors who make contract decisions. Their strategic interactions are studied within the context of both structural arrangements and procedural routines established and perpetuated by government, based upon assumptions regarding the advantage of free and open market competition.

In 1991, federal, state, and local governments spent $940.7 billion for the purchase of goods and services (State of Small

Business, 1992); the state of Illinois spent $4.6 billion; the city of Chicago spent $583 million; and the Chicago Transit Authority spent over $300 million.[1] Elected and appointed officials control these dollars. These officials make government's final contract award decisions using their own discretionary power rather than solely depending upon the discipline of the market. An enormous array of government regulation is designed to ensure the market's influence over contract award decisions made by government officials. Despite these laws, regulations, and procedures, scholars as well as the general public suspect that contracting dollars are used to favor political supporters and help politicians realize an electoral benefit rather than to benefit the public good.

The press adds to our suspicions by in-depth reporting of corruption in government procurement. They report corruption at all levels of government and further cause us to question whether the public is being served. Our concern is justified due to the overwhelming contracting power of our governments, and we continually question, "Can our elected and appointed officials be trusted to spend tax dollars for the public good?"

The theoretical foundation of this study is that of distributive politics as developed by American political scientists. In its most reduced form, distributive politics

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[1]Expenditure figures are from public record.

provides a framework to answer the basic question about the government contracting process: "Who wins government contracts and why?" Distributive politics provides an appropriate theoretical framework to answer this question for two reasons. First, the distributive politics approach seeks to explain why some groups receive more from government than other groups. Second, government contracts are one of three principal types of benefits that scholars in this area have studied. The other two types of government benefits that have been studied are government jobs and grants for major projects. All three types of benefits share a common attribute: taxes are collected from all citizens to pay for them while the benefits are targeted to only a few citizens.

This researcher's review of earlier studies of distributive politics has found that they mainly focused on the distribution of highly aggregated federal programs. The principal actors included in these studies are congressional officials and their committee memberships. Early research generally excluded the study of local government agencies and the effects of their distributional decisions. In contrast, this study focuses on the distributional decisions of one local government agency: the Chicago Transit Authority.

I will limit this study to the contracting behavior of the Chicago Transit Authority during the 10-year period from 1981 to 1992. My study seeks to answer three questions:

1. Does an agency's contracting process result in the purchase of goods and services at the lowest competitive price?
2. Do elected politicians use their positions in government to influence an agency's contracting process so as to reward their allies with contracts?
3. Do government bureaucrats distribute contracts strategically so as to maximize support for themselves?

A positive answer to the first question would suggest that the agency's procurement function is providing low-cost service in the public interest. Conversely, positive answers to questions 2 and 3 would support the hypothesis that politicians, bureaucrats, and special interests[2] tend to benefit from agency procurement.

The local agency under study is the Chicago Transit Authority (CTA)[3]. The period of time studied extends from the last two years of Jane Byrne's mayoral term--she was elected in 1979 and left office in 1983--to the early years of Richard M. Daley's first mayoral term--he was first elected in 1989. This agency is of special interest to policymakers and the public because its service area directly affects the commuting habits of

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[2]See page 60 for a description of cozy (triangle) relationships.

[3]See Appendix B for a brief history of the Chicago Transit Authority.

two million riders per day and taxes the incomes of nearly seven million residents in a five-county region of Illinois. The CTA's service area includes the city of Chicago proper and 35 suburban areas. The agency also serves riders from Metra, the commuter rail service, and Pace, the suburban bus system.

The following brief historical sketch of the Chicago Transit Authority and the subsequent discussion about markets and nonmarkets will illustrate that the agency is, in fact, a useful subject for a distributive politics study.

## 1. Chicago Transit Authority[4]

The CTA was formed to provide efficient public transit services to Chicago residents. During the early 1900's, many privately owned transit companies struggled to provide transit service at a profit. Sooner or later all of these firms failed to be profitable and fell into receivership. By 1947, local and state politicians believed that government intervention was necessary to correct for limitations of profit-maximizing privately owned transit companies. Because the private firms were in business to make a profit, they all competed for the most heavily traveled routes, leaving the rest of Chicago with little or no service. As the market demand for transit services increased and competition stiffened, all firms failed to make a

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[4]CTA's historical perspective is based on Alan Lind's book Chicago Surface Lines.

profit and the public suffered with inferior service at a high cost. Finally, after decades of debate, the CTA was formed through the support of the mayor of the city of Chicago and the governor of the state of Illinois.

The history of Chicago's public transit system illustrates the interaction between political and economic influences on public transportation policy. Politicians and business leaders of the day sought to provide the best transit system because they believed it was essential to a vibrant and fruitful local economy. They believed that the most efficient answer was to consolidate four private transit companies into one government-controlled agency. CTA's formation in 1947 represented the establishment of a statutory monopoly to replace an oligopoly-structured transit area dominated industry. The largest private transit company, Chicago Surface Lines, was the dominant private transit company in Chicago as well as in the country and reflected Chicago's reputation as a transportation center. Alan Lind succinctly recorded this fact in his book, Chicago Surface Lines.

> It's a big story. The Chicago Surface Lines was the world's largest street railroad, with more miles of track, more cars, and more passengers than any other company. In fact during the 1930's the Surface Lines carried more passengers each day than all the nation's railroads and airlines combined. (Chicago Surface Lines, inside cover, 1979).

Despite its size and dominance, the Chicago Surface Lines, along with its competitors, went bankrupt. What happened to cause such a successful private company to fail? Lind succinctly identified the causes as the Great Depression and greater use of automobiles:

> This period [of prosperity] ended abruptly in the early thirties. The Surface Lines struggled against the Depression and the rise of the automobile, and the four underlying companies went into receivership. (Chicago Surface Lines, inside cover, 1979).
>
> [Accordingly, i]n 1945, after the failure of six separate and prolonged attempts to reorganize the two companies with the aid of private capital, the Governor of Illinois and the Mayor of Chicago proposed establishment of a public authority to acquire, own and operate the city's local transit facilities. (Chicago's Mass Transportation System, 1959).

In 1947, the Chicago Transit Authority took over the operations of three transit companies paying the firms $35 million for their routes and equipment. This ended over 20 years of public debate. A fourth company was purchased several years later. Appendix A lists key events in CTA's formation from 1925 to 1947.

## 2. Market failure

Why did the politicians seek a nonmarket answer to providing public transit services? Since the mid-1920's, it had been apparent to the political leaders of Chicago that the private transit companies could not financially survive and maintain the required level of service throughout the city. Efficiency and

distributional issues were at the core of the search for a nonmarket answer. Wolf in Markets or Governments agrees.

> The principal justification for pubic policy intervention lies in the frequent and numerous shortcomings of market outcomes ...and...distributional issues are usually more influential than efficiency ones in shaping judgements about the success or shortcomings of market outcomes. (Wolf, p.17 and p.19)

As a CTA publication put it,

> Through establishment of Chicago Transit Authority and its purchase, consolidation and operation of the city's major transit facilities, Chicago has achieved objectives that had been sought for more than half a century. These were: (1) Unified ownership and operation of the city's major transit companies under full "home rule" powers. (2) A universal transfer privilege permitting local transit riders to use the combination of routes and services most suitable for them....(7) Substantially reduced operating costs by introducing a wide range of economies that also furthered the equipment and service modernization programs. (Chicago's Mass Transportation System, 1959).

## 3. Nonmarket response

The CTA was formed to provide equal distribution of public transit service at the lowest possible cost. During the first decade of service, these two goals were achieved by the newly formed CTA. In 1959 a CTA publication titled Chicago's Mass Transportation System stated:

> The entire CTA organization is functioning smoothly and efficiently in performing the complex and essential task of maintaining comprehensive, convenient transit service for the Chicago area. (p.13)
>
> Every section of the city is now served by modern buses. And every rapid transit line is now equipped with all-metal rapid transit cars that have multiple-

> unit door control, thus reducing manpower requirements to two men per train. (p.13)
>
> Wage and material costs have advanced sharply, but CTA's annual operating costs are presently at least $35,000,000 less than they would have been if former operating conditions were in effect now. ...The personnel, formerly totaling about 23,000 employees for the three underlying companies, is now less than 14,000. (p.16)

Apparently, the politicians who believed in the ability of a nonmarket government authority to overcome the shortcomings of the market were correct.

The criteria did not change in the 1990's. Cost and equity still remain the CTA's most critical issues. CTA is under constant political pressure to maintain equitable distribution of service at a low fare throughout the city regardless of the cost of the service or revenue generated from the service route. However, the public's perception of the CTA has changed. After two and a half decades of press coverage suggesting that CTA is mismanaged and politically corrupt, the public perceives the CTA to be an inefficiently run company. The following headlines probably helped to produce this image.

> "CTA's Medley found guilty, Board member faces prison in payoff case" (Chicago Sun-Times, August 31, 1989)
>
> "Mayor's popcorn politics' Fund-raiser tied to firms awarded Midway pacts (Chicago Sun-Times, Feb. 12, 1989)
>
> "Punished for Seeking Job That Pal of Boss Got, CTA Staffer Says," (Chicago Tribune, June 16, 1993.

"Red Tape bogs down CTA, Report Says," (Chicago Tribune, August 17, 1988)

"Trains Collide on New CTA Route," (Chicago Sun-Times, Feb. 22, 1993)

"15 More Conductors Fired in CTA Probe." (Chicago Sun-Times, July 9, 1993)

"CTA Slips on Oil Deal, Moonlighting Staffer overpaid supplier $675,000" (Chicago Sun-Times, March 7, 1988)

"Demoted aide to sue CTA' aired 'bribe offer'", (Chicago Sun-times, Jan. 4, 1988)

"CTA guilty of harassing whistle blower - who get $1'" (Chicago Sun-Times Feb. 2, 1988)

"Builder accused of skimming funds, creditors say transit agencies lost $2 million," (Chicago Tribune, January 19, 1988).

These headlines and the situations the headlines and stories report support the public's belief that corrupt local politics is at the core of the agency's problems. These headlines report the influence of a mayor, a CTA board member, CTA staffers, and CTA conductors, who were local elected, appointed, or hired to serve the public. Thus the public is led to the conclusion that the nonmarket solution to the efficiency and equity problems of Chicago transportation is local politics rather than service in the public interest.

## B. Statement of the Problem

The problem under study is whether government benefits are in fact used for the public good or whether they reflect political considerations. There is a clash of interests between the public good and electoral ends where legislators want to get

reelected, and appointed officials want job security and bigger budgets. The problem of which interests are being served is real, because both elected and appointed officials have the power to make discretionary decisions, and they are in positions to enter into exchanges that can maximize their respective agendas at the expense of the public good.

Do these officials use their positions to maximize their own interests? Or, do these officials sacrifice their own interests to maximize the public good?

## C. Purpose of the Study

The purpose of my study is to examine the extent to which decisions of a major independent agency are used to serve the public good or electoral or other political ends. I will use government contracts to analyze how elected and appointed officials make discretionary decisions and to determine the relative influence of politics in awarding CTA contracts. I intend to determine whether political motives are behind the decision to award the agency's contracts or whether the public good motive is behind the contract award decision.

My study tests two competing explanations of the way government contracts are distributed. The first, I call the economic explanation to describe the circumstances under which the agency's contract decisions will most likely serve the

public. The second, I call the political explanation to describe the circumstances under which the agency's contract decisions will most likely serve political ends.

The economic explanation suggests that the most efficient producer of goods or services will be able to offer the lowest price and therefore will receive more municipal contracts. This explanation also suggests that an incumbent contractor will have the advantage of inside market knowledge and therefore will be more likely to submit the winning bids. The political explanation suggests that contractors who have political ties to government officials will win more municipal contracts.

Political science theorists have an interest in two prevailing views of who has influence in democratic governments: (a.) the elected officials who determine policy to be implemented by the value-free bureaucrat, and (b.) the bureaucrats who exercise broad discretion and uses this discretion to obtain increased budgets and job security.

I will develop a model that includes variables to measure both the economic and political explanations. The model purports to show how the agency implements a trade-off between the public good and electoral and other political considerations.

## D. Significance of the Problem

The problem is whether government benefits are used for the public good or are used for the personal gain of political allies. The problem is significant because it questions the reality that underlies the public's distrust of their elected and appointed officials. In the best case scenario, benefits will be found to clearly serve the public good. In the worst case scenario, I will find that a few are getting wealthy from government benefits at the public's expense.

Distrust of government procurement officials has a long history. Harvard professor Steve Kelman illustrated how deep the distrust runs by citing congressional testimony as far back as 1949 on federal procurement statutes. One central witness noted that "practically every law governing the procurement and disposal of property is based on the assumption that the government employees are crooks" (Peters, 1991, p.5).

## E. Significance of the Study

Two different readers will find this thesis of interest: political scientists and public officials concerned about procurement policy. The political scientist will find the study of interest because it examines the operation of distributive politics theory in a major municipal procurement process. Government officials will find the study of interest because it

critically measures, examines, and critiques the procurement process.

## 1. Distributive politics

This thesis seeks to contribute to the study of distributive politics by adding another in-depth case study to the research stream. This study is designed to compensate for several defects in recent studies of distributive politics. As noted by Michael J. Rich in Federal Policymaking and The Poor, these include:

Lack of rigorous and systematic analysis of individual government programs. Rich states that there are few rigorous and systematic empirical analyses that examine in detail the distributional consequences of the operation of a government program. My study overcomes this deficiency by analyzing the contract allocation process of a single government agency--the Chicago Transit Authority.

Use of highly aggregated benefits. Rich states that our understanding of government's distributional consequences is based on highly aggregated measures such as total federal expenditures. The consequences are measured as net effects of taxing and spending decisions. These measures seek to answer questions such as whether constituencies receive more tax benefits than they pay in taxes. My study overcomes this

deficiency by examining the individual contracts awarded by one agency rather than aggregating the contracts of several agencies.

Reliance on simplistic notions of public policymaking. Rich states that the present theoretical framework does not detail the processes involved in producing distributional outcomes, but rather relies on relatively simplistic notions of public policymaking. My study attempts to overcome this flaw by providing details of the agency's decision making process and by including all key actors in the process.

Serious lack of focus on state and local government. Rich states that the research stream in distributive politics lacks studies of state and local government. Rich believes that this is a serious conceptual void because state and local governments play an important role in overall government policymaking, and local governments determine how much national policy is executed and carried out. My study of the CTA contributes to filling this void in the research stream, because the distribution of the agency's benefits have both local and national implications, and the agency must mediate any differences between state and federal policies because it receives funding from both.

2. Procurement policy

My study will interest government officials because it critiques a procurement process within an objective analytical

framework. Because the public holds them accountable for the integrity of the procurement process, government officials need to understand the procurement process, to seek effective performance measures, and to improve the regulation and review of the process.

I have structured the research to address three pivotal policy issues involved in reforming government procurement processes. These are competition, bureaucratic efficiency, and administrative discretion.

Competition. Competition is a pivotal issue in procurement reform because competition and low-cost goods and services are intrinsically linked. An intent of procurement reform is usually to increase competition for contracts rather than decrease competition. Faith in competition emanates from our belief that competition will lower cost, improve quality, and guarantee fuller compliance with detailed specifications and performance criteria. When competition is absent, we believe a supplier will realize excess profits and/or become inefficient, resulting in excess costs to government (Council, 1983, p.3). My study analyzes the competitiveness of 800 contracts.

Efficiency. The efficiency of a government's procurement process is critical because inefficiency may increase costs of all goods and services, decrease equity to all parties, and

lessen the likelihood that goods and services will be acquired on-time and within budget. The press frequently reports the high cost of goods and services due to the government's restrictive specifications, specialized demands, non-commercial requirements, and burdensome regulations. All procurement reform efforts seek ways to streamline the contracting process. My study critically examines the administrative time used by the agency to review, approve, and execute contracts for its basic goods and services.

Administrative discretion. Private sector purchasing agents are bounded by the market and profit-seeking behavior of their firm whereas the government contracting professional is bounded by ethical behavior and the public good. How much discretion should be given to those in control of the procurement process? Should they be given unlimited authority to purchase the product or service of greatest value to the public? Should they be restricted to the purchase of only the lowest-priced product or service complying with a written specification? My study analyzes the extent to which the administrator's discretion influences the procurement process for competitively bid contracts and interprets whether that discretion is likely to increase or lower the costs of what is being procured.

# II. LITERATURE REVIEW

This literature review provides the foundation for a model that explains how the agency's contract decisions are influenced by economic and political factors. The literature review is organized into four sections, each of which deals with an area of concern relevant to the model. Together, all four sections describe a set of normative processes and outcomes that are used to test the economic and political explanations of the agency's contracting process. The literature review draws from several disciplines in order to develop the normative model.

The first section reviews government procurement and how the procurement process attempts to maintain free and open competition. The second section reviews distributive politics and urban politics to explain how government determines who gets what benefit. The third section reviews normative expectations of the actors and how they can influence the contracting process. The fourth section describes cozy relationships and how these relationships reveal whether the actors are seeking to maximize the public good or their self-interests. The intent of the literature review is to provide the foundation for the multivariate model presented in Chapter V that is used to explain change in contractor.

## A. Procurement

Government procurement regulations represent a mediating factor between an imperfect government and an imperfect market. The researcher's underlying approach to understanding markets and government[5] is provided by Charles Wolf, Jr. Wolf believes that neither markets nor governments are perfect and that government regulation is needed to correct the imperfections of both. In this section, I use Wolf's theory of markets and nonmarkets to identify how the government procurement policy and regulation are designed to correct for the imperfections in both the nonmarket and market.

### 1. Flawed markets and nonmarkets

The market process is flawed. Perfect competition does not exist in the market. The flaw in competition creates a market that cannot be trusted to efficiently and equitably distribute its benefits, and Wolf believes the public feels a need for regulation because it perceives the following market failures:

> (a) that the externalities resulting from market activities are substantial; (b) that a high degree of monopoly is associated with the production and sale of market output; (c) that imperfections in the market are rife; and (d) that inequitable distributional benefits result from market activities. (Wolf, p.58)

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[5]Government is also called nonmarkets.

Leading economists Richard and Peggy Musgrave also believe that the market is not perfect:

> In reality, various difficulties arise. Markets may be imperfectly competitive, production may be subject to decreasing cost, consumers may lack sufficient information or be misled by advertising, and so forth. For these reasons, the market mechanism is not as ideal a provider of private goods as it might be. (Musgrave and Musgrave, p.4)

These market failures heighten the public's suspicions of government procurement because the public does not see its inner workings. The question of who controls the procurement process legitimately heightens the public's desire for procurement regulation and reform, because without seeing the inner workings, the accountability problem reduces the answer of "Who controls?" to little more than an educated guess. The need for an answer is urgent, because the public's suspicion is heightened by their general fear of the unknown. Preston (1984) explains this fear in the following manner:

> Just as there is a fear that machines people construct may get out of control and turn from being the ruled into the ruler, so there is also apprehension that the organizations people develop to achieve societal goals may eventually become powerful enough to set goals of their own.
>
> The conservative point of view contends that all agencies try to assume a controlling voice over governmental decisions. This fear is in opposition to the liberals' attitude toward bureaucracy, which claims that bureaucrats are timid, unimaginative, and reluctant to make decisions. (Preston, 1984).

Also, the market failings that form the basis for a nonmarket response are perceived by the public as prevalent due

to the frequent press reports that substantiate some of the public's worst expectations regarding fraud, waste and mismanagement of the procurement process.

One example was reported in the Sun-Times on February 24, 1992. "Congressional investigators are sharply critical of the CTA, and they fault the U.S. Transportation Department for poorly monitoring $1.6 billion in federal grants to the transit agency." The report continued, "Ineffective oversight...[makes the system]...vulnerable to fraud, waste, abuse and mismanagement." The article went on to say congressional researchers "...uncovered instances of 'possible bid rigging' and 'collusion to rig bids by CTA employees,' as well as thefts of supplies and the 'continual acceptance of shoddy work products.'" Also, the Sun-Times reported that Metra, the commuter rail system, lacked "...policies to control costs on major construction projects. For example, estimated cost for renovation of a Chicago passenger terminal, under way since 1980, rose from $47 million in 1985 to an 'alarming level' of almost $162 million in 1990."

The Chicago Sun-Times reported another example of how the agency wasted taxpayers' money. Faults in the procurement process caused the waste. On August 26, 1991, Chicago Sun-Times reported this waste in an article titled, "CTA Lost $500,000 Trying to Steer Big Ad Contract".

> "The CTA refused for 18 months to accept the best bid...while trying to steer the award to a politically

> connected firm offering the cash-strapped agency $4.5 million less...Delayed action on the $40 million ... contract cost the CTA more than $500,000 in revenue it would have earned had the contract been awarded promptly..."

On August 31, 1989, the Chicago Sun-Times reported on the first CTA Board member ever to be convicted of federal corruption. Howard C. Medley Sr. was convicted of peddling his political influence as a CTA board member to collect a $25,000 bribe for helping a firm win and maintain a $38 million CTA contract.

These reports feed the public's belief that special interests, if given an opportunity, will lead to significant inequities where the wealth of government will be concentrated in the hands of a few and reduce the money available to serve the public good. Consequently, a nonmarket response is demanded due to the market's failings, but the nonmarket is not perfect either. The nonmarket has its failings. Wolf identifies the bureaucrat as the main culprit for making the nonmarket process inefficient and ineffective at serving in the best interest of the public good. (Wolf, p156). And Wolf uses the procurement process to illustrate how the bureaucrat causes a flawed nonmarket process. (Wolf, p166).

Wolf claims that in most cases the source of government imperfection is the arbitrariness related to the bureaucrat's discretionary power and/or the influence of the politician.

Accordingly, Wolf explains the sources of government imperfections as arbitrariness, pettiness, favoritism, and delay in bureaucratic decision making. According to Wolf, delay in decision making is an example of administrative control under the discretion of politicians and bureaucrats, and any delay can be interpreted as either arbitrary or favoritism to special interests.

## 2. Procurement regulation

The public believes government procurement must be regulated. The goals of procurement regulations are stated by Kelman who writes about the three principal goals of government procurement in his book, Procurement and Public Management: The Fear of Discretion and the Quality of Government Performance, Kelman identifies the three goals of procurement regulation:

1. Equity - "provide fair access to bidders in competing for government service."
2. Integrity - "reduce the chances for corruption in the procurement process."
3. Efficiency - "procure at the lowest possible price for goods and services of the quality desired."

Wolf believes that procurement regulations and their diligent application can correct for some of the obvious imperfections in the market system (Wolf, p165). Regulations are intended to encourage competition for government contracts and to ensure that openness is maintained. This goal is reflected in a

frequently stated phrase used by government procurement professionals: "We must keep the playing field level." The key factor used to keep the playing field level is competition.

3. Competition

Competition is the single, most required factor in any government-contracting decision. The public as well as public officials accept competition as an indispensable characteristic of any government procurement. In fact it is the ultimate litmus test. Integrity of the procurement process will be assumed when competition is found, and corruption, to some degree, will be assumed when competition is missing. Without evidence of competition, the public believed goods and services are being purchased at a higher-than-needed, if not excessive, cost.

Federal procurement regulations also place a high premium on competition for the agency: Competition In Contracting Act - public law 98-369, the Federal Transportation Administration circular 4420.1B, and Federal Acquisition Regulations. All regulations require that all procurement transactions will be conducted in a manner providing full and open competition. The principle methods for providing competition are sealed bid solicitation and competitive proposals. Both regulations prohibit the acceptance of an only-bid response or a sole source requirement without a detailed cost analysis and justification. Both regulations require negotiations, rather than an

unchallenged acceptance of an only-bid response or sole source requirement.

This study considers competition as the expected norm in government procurement, and competition is required by the agency's regulations governing purchase transactions.

> ...all purchase orders or contracts of whatever nature for the purchase, lease or sale of personal property, materials or supplies, labor, service or work involving amounts in excess of $10,000 made by or on behalf of the Authority, shall be let by free and open competitive public bidding, after public notice, to the lowest responsive and responsible bidder(price)...(CTA, 1992, p.4)

The agency defines competition as the "solicitation of proposals...under which all responsible sources are afforded an equal opportunity to compete for award of a contract. Competitive bidding shall include public notice of the proposed contract action, uniform contract terms, public opening of bids and award to the lowest responsive and responsible bidder." (CTA 1992, p.1).

## 4. Market corrections to assure competition

Regulation performs an important task for government procurement. Regulation must formulate policies to correct both market and nonmarket imperfections, and it must ensure the implementation of that policy. In addition, the corrections must be effective simultaneously; market adjustments cannot lead or lag nonmarket adjustments. In order for corrective policies to

create a free and open competitive environment, the following three tasks must be accomplished:

1. Ensure sufficient information and equal distribution of that information so all firms have the same basis for their price.

2. Eliminate unnecessary barriers to entry so those who have the capacity to perform can qualify.

3. Eliminate personal discretion in the contract decision so all firms are evaluated using the same economic factors rather than subjective chosen political factors.

Through procurement regulation, the following three policies are established to accomplished the necessary tasks:

1. Information. Public advertisement of all requirements using detailed contract documents that furnish all necessary information

2. Open Door Policy. Avoid industry specific barriers such as size, location, and financial credit rating requirements; technology restrictions such as patents, trademark and specific process requirements.

3. Value-Free Evaluation. Write a detailed policy that sufficiently describes the purchasing process and procedures so as to eliminate personal or administrative discretion in bid evaluation and contract award.

Diagram I summarizes the relationship between an imperfect market and imperfect government and identifies the role of government procurement regulations that are intended to correct the imperfections in the market and government imperfections.

DIAGRAM I: CORRECTIONS OF IMPERFECT MARKET AND IMPERFECT NONMARKET SYSTEMS

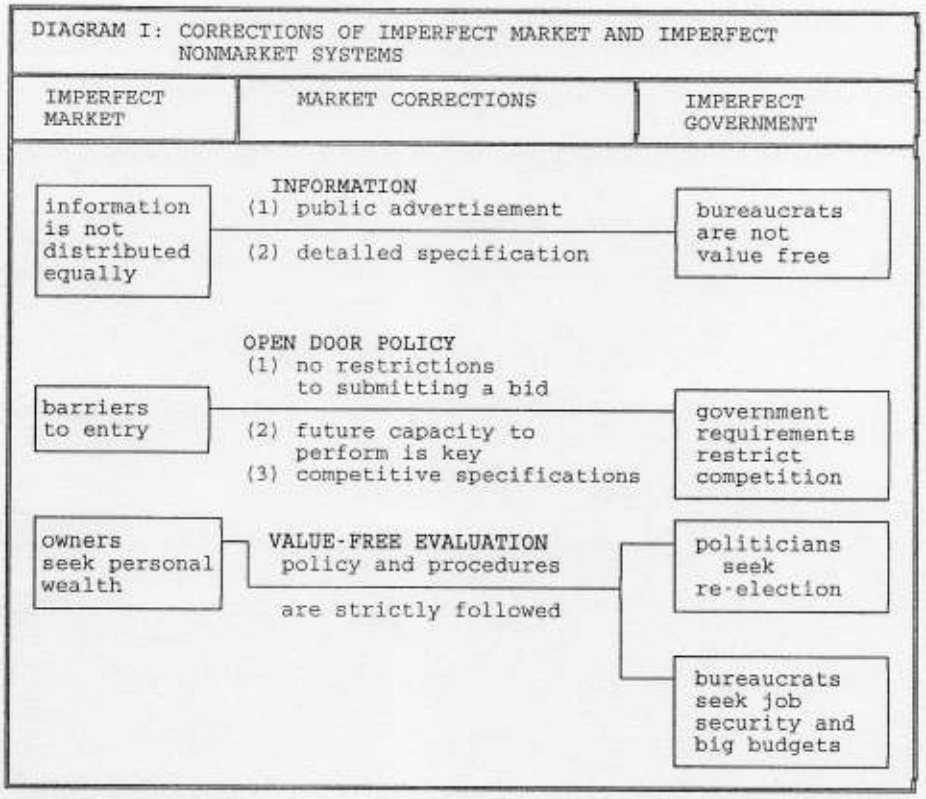


Diagram I illustrates the three principal responsibilities of the agency's Purchasing Department. However, Diagram I also illustrates a central issue of this study: administrative discretion. The public believes that regulation is necessary to control the discretionary decisions of the bureaucrats from being arbitrary. However, Kelman believes that administrative discretion is the way to improve government procurement. Kelman does identify competition as the principal yardstick by which to

measure success of an agency's procurement policy, but he suggests considering administrative discretion as a significant factor to achieving improved efficiency in government procurement.

> ...the conventional answer [to procurement problems] is that the source of the trouble is lack of competition in awarding contracts. The lack of competition, the story goes, is in turn engendered by cozy relationship between government officials and contractors [itself the product of revolving doors and payoffs] and by the indifference that sometimes afflicts people not responsible for watching the bottom line. As a result of the lack of competition, according to conventional wisdom, the government pays contractors too much and gives 'wired' awards to contractors who do not deserve them. The conventional solution to these problems is more competition. I, too, believe that the government often fails to get the most it can from its vendors. In contrast to the conventional view, however, I believe that the system of competition and the controls against favoritism and corruption are more often the source of the problem than the solution to it. The problem with the current system is that public officials cannot use common sense and good judgment in ways that promote better vendor performance. (Peters, 1991)

In order to understand the impact of administrative discretion, I use Allison's perspective of the rational actor model that allows us to establish a set of expectations regarding the actors, their behavior, and their decisions. Allison (1971) explains rationality and the importance of the rational actor within the context of a large bureaucratic organization in the following way:

> Rationality refers to consistent, value-maximizing choice within specified constraints. The rigorous model of rational action maintains that rational choice consists of value-maximizing adaptation within the context of a given payoff function, fixed alternatives,

> and consequences that are known... (Allison, 1971, p.31)
>
> Rational actor implication that important events have important causes, i.e., that monoliths perform large actions for large reasons, must be balanced by the appreciation that (1) monoliths are black boxes covering various gears and levers in a highly differentiated decision making structure and (2) large acts result from innumerable and often conflicting smaller actions by individuals at various levels of bureaucratic organizations in the service of a variety of only partially compatible conceptions and national goals. (Allison 1971, p.5)

Allison also describes an agency's decision as an aggregate of many individual decisions.

> Government decisions are made, and government actions are taken, neither as the simple choice of a unified group, nor as a formal summary of leaders's preferences. Rather, the context of shared power but separate judgements about important choices means that politics is the mechanism of choice. Each player pulls and hauls with the power at his discretion for outcomes that will advance his conception of national, organizational, group, and personal interests. (Allison 1971, p.171)

This analysis of government purchasing shares Allison's view of rationality and government decision-making process in which different bureaucratic and political viewpoints compete in the process of reaching the final decision, and recognizes that policy issues are multifaceted rather than controlled by a single decision maker utilizing a simplistic formula for decision making.

## B. Distributive Politics and Urban Politics

Distributive politics and urban politics refer to the process of allocating the public's limited resources. Distributive politics studies distributional issues at the congressional level, and urban politics studies distributional issues at the municipal level. Both theoretical frameworks deal with the geographical distribution of benefits within a political system. The theories of distributive politics and urban politics offer similar explanations of how some people get more from government.

### 1. Distributive politics

Theodore J. Lowi was the first to explore distributive politics in his work during the late 1950s. Like other scholars, he used the case-study method to gain a better understanding of government, but unlike them, he was not satisfied with theories used to interpret the cases. Lowi stated,

> It seems to me that the reason for lack of interesting and non-obvious generalization from cases and other specific empirical studies is clearly that the broad-gauged theories of politics are not related, perhaps are not relatable, to observable cases. (Lowi, p.687)

Lowi emphasized the need for a basis to cumulate, compare, and explain the diverse empirical relationships found from case studies. His goal was to develop a framework that would suggest generalizations sufficiently close to the collected data and that would be sufficiently abstract to enable theory development. In order to develop this framework, Lowi posited several

relationships that are still valid today and accepted as part of the foundation of this study. These relationships are as follows:

> (1) The types of relationships to be found among people are determined by their expectations-- by what they hope to achieve or get from relating to others. (2) In politics, expectations are determined by governmental outputs or policies. (3) Therefore, a political relationship is determined by the type of policy at stake, so that for every type of policy there is likely to be a distinctive type of political relationship. If power is defined as a share in the making of policy, or authoritative allocations, then the political relationship in question is a power relationship, over time, a power structure. (Lowi, p.688)

Lowi provides three distinguishing characteristics of distributive politics: the relationship among actors, the nature of the policy decision, and the nature of the benefit.

The relationship among the politicians and bureaucrats as defined by their expectations is the first distinguishing characteristic of distributive politics provided by Lowi. This characteristic is also core to this study, because this study posits that these politicians and bureaucrats control the procurement process at the agency under study, and they are likely to influence the process to meet their personal expectations rather than the public's benefit. The general framework provided by Lowi allows the examination of the actors' output decisions as a method of inferring their intentions, and will allow the definition of any "power structure" clustered about the policy decision under study.

The second distinguishing characteristic of distributive politics offered by Lowi is its short-term rather than a long-term policy focus. This characteristic broadly defines the nature of policy decisions politicians and bureaucrats control, i.e., long-term or short-term. In the decision-making process for long-term policy decisions, politicians and bureaucrats governments must make decisions regarding the distribution of finite and scarce resources. Two examples of long-term decisions are conservation policies related to the U.S. National Forest Service and size of the military forces. Quality of life issues and guns-versus-butter arguments are legitimate facets of the public polemic regarding these issues. However, long-term type decisions are not the subject of distributive politics, because policymakers cannot disaggreate the benefit and distribute to individuals; these benefits tend to be highly aggregated for broad constituency appeal. Also, these long-term policy decisions are of little electoral impact because their effectiveness is measured in decades or generations rather than fiscal years.

On the other hand, short-term type policy decisions, such as the government distribution of jobs, grants, and contracts, can be desegregated and given to individuals. These types of policy decisions are the subject of distributive politics. Decisions regarding the distribution of short-term type policy decisions are generally made within a fiscal year and can be made without

regard for the overall limitation of a finite and scarce resource; governments need to spend their budgets and need to issue contracts. For the short-term policy decisions, "Who gets the benefit?" is the principal decision.

The third distinguishing characteristic of distributive politics is the size of the benefits being studied. Generally, distributive politics studies benefits that represent only a fraction of the a total government allocation. Generally, the benefit is small relative to the government's total budget, total program, or total expenditure. The benefit's diminutive size allows politicians and bureaucrats to more readily distribute the benefit to favored individuals rather than to be distributed as a generalized social good. Lowi states,

> Distributive policies are characterized by the ease with which they can be disaggregated and dispensed unit by small unit, each unit more or less in isolation from other units and from any general rule.(Lowi, p.699)

Distributive politics' short-term focus and individualized benefits place considerable power in the hands of the public officials, because they enable the politicians and bureaucrats to make quicker allocation decisions, involve fewer actors, and make decisions with less debate. Lowi describes this power in the following manner:

> These are policies that are virtually not policies at all but are highly individualized decisions that only by accumulation can be called a policy. They are policies in which the indulged and the deprived, the loser and the recipient, need never come into direct confrontation. Indeed, in many instances of

> distributive policy, the deprived cannot as a class be identified, because the most influential among them can be accommodated by further disaggregation of the stakes. (Lowi, American Business, p.691)

Lowi's three distinguishing characteristics of distributive politics define the type of benefit under study: government contracts. Individually, government contracts are small relative to the total budget; contracts are awarded to meet short-term needs; contract losers and winners generally do not confront one another, but when they do, both winner and losers self-interest could be accommodated by the procurement process. Finally, government contracts fit Lowi's "nickel-dime items" analogy.

> When a billion-dollar issue can be desegregated into many millions of nickel-dime items and each item can be dealt with without regard to the other, multiplication of interests and of access is inevitable, and so is reduction of conflict. (Lowi, American Business, p.691)

The agency under study, the CTA, issues over 20,000 contracts per year with an aggregate value of approximately $500 million[6]. This volume of contract activity allows the disappointment of losers to be replaced with the hope of future contract success.

## 2. Politicians' motives

A politician's motive explains how contract awards can be used as political benefits. Political benefits, such as contracts, are not awarded in isolation and we need to understand the politician's motive to favor a particular firm in order to

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[6]See Aggregate Contract Value in Appendix C "Definitions" for basis.

understand why politicians will influence contract award decisions. Rundquist (1980) provides an explanation of the politicians' motive within the distributive politics framework:

1. Congressmen seek reelection and view the provisions of political benefits to their constituents as a way of increasing their likelihood of reelection.

2. Congressmen can affect the content of programs either directly through the authorizing or appropriations processes or by getting bureaucrats to implement programs in ways they desire.

3. Some congressmen have more resources than others and are better able to obtain political benefits for their constituencies.

4. The congressmen with the most resources for controlling a given program are those on the committee with jurisdiction over the program.

5. Therefore, the constituencies of members of these committees should benefit to a greater extent than other congressmen from a program under their jurisdiction. (Rundquist, p.230)

Dobek (1993) draws a similar conclusion that electoral ends cause political goals to dominate over economic goals. In its most simplified form, distributive politics purports that elected officials will manipulate the legislative system to maximize the distribution of benefit to their constituency. This is desirable to the elected officials, because they believe that by targeting benefits to their home districts, their reelection bid will be successful. Reelection is purported to be the single most important goal of the legislator even more important than the public good, i.e., he or she will sacrifice the public good for personal gain. The politician's motive is clear, and

distributive politics in conjunction with the rational actor model explains the mechanisms politicians use to target benefits to their district.

It is important to note that distributive politics is not the only explanation for the allocation of jobs, grants, and contracts. In fact, distributive politics theory is in direct opposition to the theory offered by Richard A. Musgrave and Peggy B. Musgrave in Public Finance in Theory and Practice (1989). These scholars claim the government's allocation process as a function of economic principles rather than political principles. The low-bidder and competition-based explanations offered by procurement policy as discussed in the first section of this chapter are congruent with Musgrave and Musgrave's explanation, because they purport that economic factors will determine efficient and equitable contracts awards.

This study considers both economic and political explanations as congruent with the rational actor assumptions. Both explanations offer a rational answer to the thesis' core question: "Who wins government contracts and why do they win?" Economics' rationale views contracts as a public good when they represent low-cost inputs to the agency issuing the contract. Whereas, distributive politics' rationale views contracts as political benefits for those in cozy relationships with an agency's elected and appointed officials. For the economist, the

greatest benefit is defines as a low-cost input to the agency. For the political scientist, greatest benefit is defined as electoral success. Both are rational choices within the framework of their respective models.

3. Targeting benefits

Targeting is the ability of a politician or bureaucrat to tactically channel an agency's benefit to a specific constituency. Rich (1993) provides a good explanation of targeting.

> That government officials are wont to spread benefits widely is not an inevitable outcome. Governments can -- and do -- target funds to needy places and to needy people. The extent of targeting varies by level of government, across governments at the same level, and also over time within particular governments. (Rich, p.329)

In Rich's scholarly work regarding the distribution of community development block grants (CDBG), he identified two determinants of targeting CDBG at the state level. One is the competitiveness of the state's political system and the second is the unity or consensus among state policymakers. He identifies political unity as a way to measure whether politicians can target benefits. Rich (p152) concluded that the ability of the politicians to target benefits is reduced under competition or conflict and increased under unification or consensus.

Rich's finding is pertinent to this study because he identifies unity, i.e., consensus and conflict, among the

politician actors as a key factor in determining who gets the benefit. In his study of Chicago's CDBG program, Rich discussed the political unity at the county and city level as a factor in targeting benefits. In his discussion, he describes Mayor Richard J. Daley's ability to bring together a coalition and describes the loss of that coalition after leaving office, providing a basis for identifying similar political unity called political regimes.

4. Urban politics

Urban politics studies the reasons for the distribution of urban services within the geographical boundaries of a municipality. Mladenka states the basic urban politics hypothesis regarding how a municipality distributes urban services:

> "...urban services are political sources that can be manipulated, redistributed, and withdrawn in the scramble for electoral advantage. Loyal wards are rewarded with superior services. Major service decisions are made by the machines, handed down to the bureaucracy, and implemented in accordance with the scheme that seeks to wring maximum political advantage from the distribution of finite service resources." (Mladenka, p991)

Urban politics and distributive politics both probe for an explanation of the geographical dispersion of government benefits, within a political context. The principal difference between the two theoretical frameworks is that urban politics is a micro-analysis of how an individual municipality decides who

gets what benefit within their municipal boundaries. This focus leads researchers to question who controls the bureaucracy's distributional decisions to determine the ultimate distribution of urban services. Like distributive politics, urban politics offers two explanations.

One explanation says that bureaucratic decision rules best explain the distribution of urban services where professionalism dominates municipal agency routines so that systematic bias is unlikely (Miranda, 1994). This explanation means that distribution decisions are made by professional administrators who rely upon technical-rational rather than political criteria to guide distributional choices. (Mladenka, 1980).

> The complexity of municipal government requires the services of career specialists who bring professional values to bear during the resolution of distributional issues. The pattern of service distribution can best be understood in terms of the need of public bureaucracies to simplify reality and avoid conflict. (Mlakenka, p991)

The other explanation says that politicians control the bureaucracy's distribution of urban services. The clash between who controls a municipality's distributive policies, the politician or the bureaucrat, is best illustrated by Mladenka (1980) when he reported the findings of interviews with 31 of 48 city of Chicago aldermen.

> These aldermen are disdainful of the notion that the bureaucracy may control the service distribution process and that professional managers rely upon technical-rational criteria to resolve distributional issues. Instead, they are confident of their ability

> to manipulate the administrative apparatus to secure superior services. Their power stems from their ability to deliver the vote, and they can count on the vote because they provide their constituents with tangible, material rewards. (Mladenka, 1980)

Mladenka succinctly states the reason for the clash for control: "Who gets what is simply a questions of who has influence." My study simultaneously tests both explanations by measuring political and administrative influence in the same regression analysis. My study also overcomes two problems of urban politics research as noted by Miranda[7].

1. Political scientists did not study the independent and joint effects of political influence and bureaucratic influence.
2. Political scientists accepted the validity of bureaucratic-decision-rules explanations based on the absence of correlation between service distribution and specific political variables. They did not adjust for measurement error between a ward's electoral support for the mayor and the benefits the ward receives, and they focused on a single administration thereby failing to consider how different regimes, or governing coalitions, may influence patterns of service distribution.

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[7]For a summary of early research, see the following article written by Rowan A. Miranda and Ittipone Tunyavong: "Patterned Inequality? Reexamining the Role of Distributive Politics in Urban Service Delivery," Urban Affairs Quarterly, Volume 29, Number 4, June 1994.

My study overcomes both of these problems by measuring both political and bureaucratic influences separately and studying contract awards across 4 mayoral terms and the different wards.

## C. Actors' Basic Motives and Pattern of Influence

The actors and their basic motives for decision making are important in interpreting discretionary decisions of bureaucrats, politicians, and private firms. Following is a description of the basic motives of the three key actors in the procurement process.

### 1. The bureaucrat

Scholars frequently question the behavior, motive, and power of the bureaucrat. According to Cain, Ferejohn, and Fiorina, the bureaucrat, and not the politician, controls an agency's decisions. In fact, the politician is at a disadvantage.

> '...The bureaucracy has hardened itself to political pressure.. . . An agency does what it wants to . . . and pays little attention to letters from congressmen...Intervention often gets the congressman involved in a dangerous local squabble where he can't win. (Cain, Ferejohn, and Fiornia, 1987, p.73)

In addition to independence and power, the bureaucrat's role within the agency tends to focus on written policy and procedures. According to Webster's New World Dictionary, College Edition, a bureaucrat is "an official in a bureaucracy; hence . . . an official who follows and insists on an inflexible routine, proper forms, rules..." And what is a bureaucracy? The Dorsey

Dictionary of American Government and Politics, 1988, offers the following definition: "The totality of government offices . . . that constitute the permanent government of a state; that is, those people and functions that continue irrespective of changes in political leadership."

The above definitions portray the bureaucrat as a person independent of political influence; as a person whose career at the agency would last longer than the politician's career; and as a person who follows written procedures. Two concerns arise from this profile of the bureaucrat. First, how can the politician constrain the behavior and independence of the bureaucrat and, second, does the bureaucrat really want to seek or maintain an open or competitive environment for decision making.

Regarding the first concern, Rundquist (1980) promotes job security and budget control as an incentive to constrain the bureaucrats' behavior and to hold them accountable. As to the second concern regarding the bureaucrat, Dobek (1993) believes that it is unlikely that the bureaucrat will seek or maintain an open competitive environment. According to Dobek's study of privatization efforts in Great Britain, bureaucrats prefer the form of privatization that would face the least amount of competition when the agency is privatized.

This profile of the bureaucrat provides a basis for hypothesizing that the bureaucrat will tend to influence the contracting process differently than the politician, and that bureaucrats may not work with the politician to obtain low-cost inputs and maximize the public good due to their independence.

## 2. The politician

The politician's motives are aptly explained in The Personal Vote by Cain, Ferejohn, and Fiorina (1987). They explain the politician's principal motive as winning election or re-election. In order to accomplish this, politicians are compelled to serve their constituency by delivering specialized benefits. Their success in servicing their constituency is measured in the actual benefits delivered even though their voting record may also be used as a record of their service. The politicians' principal goals are to deliver local benefits rather than generalized benefits and to service their supporting interest group or groups to ensure the group's support for the following election, and they must accomplish these goals while maintaining the image of serving the general good. Their power is both their vote and their ability to enter into exchanges with the bureaucrat to achieve effective distribution of benefits to their constituency and, whenever, possible to reap extra and unscheduled benefits.

In the arena of government contracts, this means that the successful politicians will get or take credit for awarding their

friends contracts, and the politician must have a working relationship with the bureaucrat who implements policy and the procurement process in order to influence the contracting process.

Most scholars will agree with Cain, Ferejohn, and Fiorina (1987) that the ideal relationship between the politician and bureaucrat is one which makes government work to deliver benefits to constituents. However, the question remains whether in reality they are working together to deliver maximum benefits to their constituents or whether they are working together to deliver specialized benefits to serve their own respective interests.

### 3. Private firms

This study accepts the owner of a private firm as a rational actor and a proactive agent in the market. This means a firm is capable of making rational actor decisions in the political arena as well as the market while maintaining the firm's primary goal to maximize profits.

As a rational actor, the firm can make choices and have goals and expectations. The behavior of private firms may be explained by three variables: (a) their operating costs, (b) their desire to dominate their market by seeking the power to control their market segment, and (c) their personal networks and

contractual relationships. The rational firm will choose those strategies that reduce operating costs, increase control of their marketplace, and establish and/or strengthen those relationships that lead to new or expanded profitable business. Their goal to remain dominant in the market explains why a firm would seek membership in a political coalition and coincides with Allison's (1971) description of "a coalition of participants."

Coalitions help firms remain dominant in the market during all economic times by creating barriers to entry or growth for other firms. The firm's desire to remain dominant explains why a firm would be willing to become part of a political coalition with elected officials and bureaucrats, if the coalition will help the firm achieve any one or all of its goals.

4. Pattern of influence exercised by the actors in control of purchasing

The three principal actors who can influence an agency's contract decisions are bureaucrats, politicians, and owners of private firms. The public's initial assumptions about each actor has generally been ideal:

1. Bureaucrats follow procedures and make unbiased decisions.
2. Politicians seek to maximize public good by making prudent public policy.
3. Private firms obtain all necessary information and set price equal to marginal cost.

However, the public has been awakened by experience that these assumptions are unrealistic under many circumstances. Following is a more accurate portrayal of the behavior of each actor. Diagram II depicts how each type of actor is behaving when a pattern of influence is not being exercised by the actor and when a pattern is being exercised by the actor in the purchasing process.

DIAGRAM II PATTERN OF INFLUENCE EXPRESSED BY ACTORS

| PRINCIPAL ACTORS SHOW NO PATTERNS OF INFLUENCE | PRINCIPAL ACTORS SHOW A PATTERN OF INFLUENCE |
|---|---|
| HOW THE ACTOR IS BEHAVING | HOW THE ACTOR IS BEHAVING |
| politician serving public interest | politician serving their own interest |
| bureaucrat administers policy for public good | bureaucrat administers to maximize their personal rewards |
| firm sets price based on economic conditions | firm sets price above market prices based on insider knowledge. |

| MOST LIKELY RESULT IF ABOVE PATTERNS ARE FOUND: | |
|---|---|
| DISTRIBUTIONAL EQUITY | DISTRIBUTIONAL INEQUITY |
| EFFICIENCY OF AGENCY | INEFFICIENCY OF AGENCY |
| LOW-COST INPUT | HIGH COST INPUT |
| CONFLICT AMONG ACTORS | CONSENSUS AMONG ACTORS |
| HONESTY PRACTICED AMONG ACTORS | DISHONESTY CONDONED AMONG ACTORS |

## 5. Agency actors in the contracting process

Who are the actors in the agency's policy subsystem and how can we model their behavior? In order to answer this question, my research includes all agency actors who operate within the agency's contracting process to award annual-order contracts[8].

[8]The definition of "annual-order contracts" is in Chapter IV.

There are nine actors in this agency's contracting process. Some are politicians and some are bureaucrats. The mayor of the city of Chicago, the chairman of the Transit Board, and the President of CTA are considered politicians by this study. The mayor is considered a politician by this study because the mayor is elected by the people. The chairman and the president are considered politicians because they are appointed by elected officials to their public office.

The chairman is appointed to the Transit Board by the mayor of the city of Chicago with the concurrence by the governor of the state of Illinois and elected chairman of the Transit Board by the majority vote of the 7-person appointed board. This political appointment means the chairman and the board members serve at the pleasure of the mayor and the governor, and the board members represent a source of political oversight and influence for the mayor and the governor. Therefore, the appointment itself can be viewed as a political reward for past loyalty to the mayor or the governor. The chairman and board members also receive personal gain, because all the board members are compensated for their services and they earn pension benefits.

The president is considered a politician because he is selected and appointed by the Transit Board with the concurrence

and recommendation of the mayor[9] of the city of Chicago thereby making him subject to direct political influence.

The Chairman and President are the only political actors inside the agency. The remaining actors are generally hired through the agency's personnel department and are assigned or promoted to their particular position. These actors have less political influence and are selected based on partisan politics, patronage, nepotism, or professional standards. However, all political and administrative actors share in the power to recommend and award contracts. With few exceptions, six administrative actors participate in the review and approval of the agency's contracts.

1. Vice President of Administration over Purchasing
2. Purchasing Agent
3. General Manager of the Using Department
4. Budget Manager
5. DBE Manager
6. Contract Officer

Chart No. I summarizes the most likely reason for each person to ascend to the position.

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[9]The Metropolitan Transit Act does not require the mayor's approval prior to the hiring of a president for CTA. However, the need for the concurrence and/or recommendation of the mayor is aptly documented by press reports prior to the appointment of any president.

CHART I: REASON FOR ACTOR'S ASCENSION TO POSITION

| POSITION | REASON FOR ASCENDING TO POSITION | MOST LIKELY INFLUENCE OF THE POSITION |
|---|---|---|
| Mayor | Elected by the voters of Chicago | POLITICIAN |
| Chairman | Appointed by mayor and governor, elected by the Board, but the mayor appoints 4 of 7 members and it is believed that the chairman is the mayor's choice. | POLITICIAN |
| President | Hired by the board and it is believed with the blessing of the mayor. | POLITICIAN |
| Vice President - Administration | Appointed by the president from inside or outside CTA based on perceived ability to carry out agenda of the President and administrative policy | POLITICIAN/ BUREAUCRAT |
| General Manager of Using Dept. | Promoted from within or hired from the outside based on professional and managerial capabilities and personal or political relationships | BUREAUCRAT |
| Purchasing Agent | Promoted from within based on professional competence and approval of leading politicians | BUREAUCRAT/ POLITICIAN |
| Budget Manager | Promoted from within based on professional and managerial capabilities and personal relationships. | BUREAUCRAT |
| DBE Manager | Reporting responsibilities dominate action. Reports directly to Chairman of Board and must enforce agency's DBE policy. | POLITICIAN/ BUREAUCRAT |
| Contract Officer | Promoted or hired based on professional capabilities and personal relationships. | BUREAUCRAT |

CHART I classifies each position based on whether there is political influence or administrative and professional influence exerted on the appointment or hiring decision. In general, when the reason for ascending to a position is dependent on an elected official or other political appointees, then the influence is

considered to be political. When the primary criteria for selection is an administrative or professional standard, then the influence of the position is considered to be bureaucratic. This classification of the bureaucrats is consistent with urban politics' portrayal of agency officials as professional administrators who rely on technical-rational rather than political criteria to guide their choices. CHART I shows that some positions represent a mixture of the two influences. The nine agency actors can be categorized as shown in Chart II. This chart condenses the nine actors into three categories: politicians, bureaucrats, and political mediators.

CHART II: GROUPING OF THE ACTORS IN CONTROL OF THE AGENCY'S CONTRACTING PROCESS

| POSITION | POLITICIAN | POLITICIAN/ BUREAUCRAT | BUREAUCRAT/ POLITICIAN | BUREAUCRATS |
|---|---|---|---|---|
| BOARD MEMBER | X | | | |
| CHAIRMAN | X | | | |
| PRESIDENT | X | | | |
| VICE PRESIDENT OF ADM. | | X | | |
| MANAGER OF THE USING DEPT. | | | | X |
| PURCHASING AGENT | | | X | |
| BUDGET MGR. | | | | X |
| DBE MANAGER | | X | | |
| CONTRACT OFFICER | | | | X |
| SUBTOTAL | 3 | 2 | 1 | 3 |
| TOTAL | 3 | 3 | | 3 |
| CATEGORIES OF AGENCY ACTORS | POLITICIANS | POLITICAL MEDIATORS | | BUREAUCRATS |

"Political mediators" as identified in Chart II represent a mixture of political and bureaucratic influences within one position. This study considers the political mediator to be a person who must have both the acceptance of the politicians at the time of appointment and a sufficient degree of expert knowledge to effectively administer policy. Consequently, job security is likely to be a function of both their ability to satisfy their political supporters with favorable decisions and the effectiveness of their administrative skills to keep their

agency or department serving the public good. Due to their dual role, they must mediate both the economic and political goals of the agency.

Chart II identifies three possible relationships among the actors. This chart groups the actors in accordance with political influence and administrative and professional influence. A second and similar grouping of the actors will also be tested in the analytical portion of this study. This grouping also includes three categories, but with a different mixture of actors in two categories.

The second grouping is based on the formal authority granted to the person due to their position within the agency. The three groups are called: politicians, bureaucrats-in-purchasing, bureaucrats-in-staff-management. These group names imply the groups' principal influence and control of the agency's contracting process. If political influence is likely to affect a contracting decision, one or all of the politicians will exert that influence. If procurement regulations and procedures are likely to effect the contracting decision, one or all of the three bureaucrats-in-purchasing will exert that influence. If budget, operating constraints or minority business participation are likely to affect a contracting decision, one or more of the bureaucrats-in-staff-management will exert that influence. Chart III identifies the actors in each of the three groupings.

CHART III: ALTERNATE GROUPING OF THE ACTORS IN CONTROL OF THE AGENCY'S CONTRACTING PROCESS

| | POLITICIANS | BUREAUCRATS-IN-PURCHASING | BUREAUCRATS-IN-STAFF |
|---|---|---|---|
| MAYOR | X | | |
| CHAIRMAN | X | | |
| PRESIDENT | X | | |
| V.P. OF ADM. - PURCHASING | | X | |
| PURCHASING AGENT | | X | |
| CONTRACT OFFICER | | X | |
| MANAGER OF THE USING DEPT. | | | X |
| DBE MANAGER | | | X |
| BUDGET MANAGER | | | X |

Both politicians and bureaucrats play an influential role in the procurement process. Their individual and group influences will be critically examined in this study.

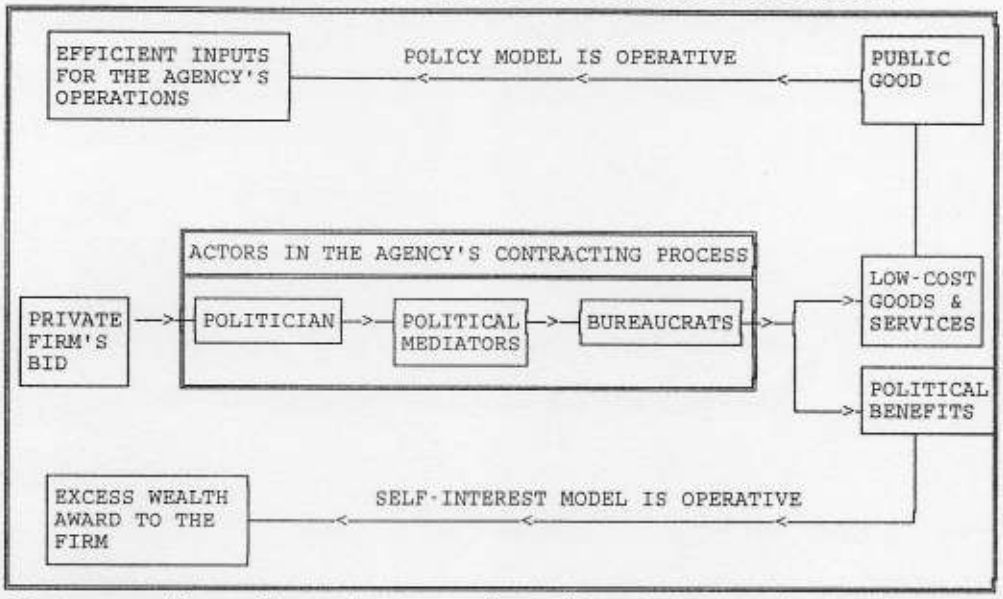
## 6. Association of actors and the contracting process

The relationship among the actors and their ability to influence the agency's contracting process are essential to the development of the research hypothesis. The relationships among the actors are valid, because the relationships are based on the formal authority granted to the persons due to their position with the agency. The assumption of the actors' ability to

influence the contracting process is valid, because their signatures are required in the task of review, approval and execution of the agency's contracts.

Chart IV diagrams the agency's contracting process and illustrates the actors' relationships in an overall conceptual framework. The framework includes three associations that are essential to the development of the research hypothesis: (a) the actors ability to transform a private firm's bid into either low-cost good or service for the agency's operation or use the agency's contracts as political benefits to favor certain firms; (b) the public good is served when contracts are issued for low-cost goods and services while private firms reap excess wealth when contracts are used for political benefits; and (c) the public good or political benefits are the only two possible outcomes of the agency's contracting process are under consideration in this study. Each possible outcome is explained by either the policy model or the self-interest model. The final section of this chapter explains the policy model and self-interest model in greater detail.

CHART IV: OVERVIEW OF THE AGENCY'S CONTRACTING PROCESS




Note: The alternate grouping of actors can be represented by substituting bureaucrats-in-line-management for purchasing for political mediators and bureaucrats-in-staff-management to purchasing for bureaucrats.

The empirical portion of this study uses data collected from the contract files and events that are congruent with the contract decisions. The data represent the actors' actual contracting decisions and represent related economic and political events that occur simultaneously with the contract decision. Arguably, only inferences regarding the actors intentions can be made from the data analysis. However, the inferences will be sufficient to differentiate the actors intentions because there are only two possible contract outcomes under consideration: (a) low-cost goods and services to produce efficient inputs for the agency's operation, and (b) political

benefits to reward political allies for past or future electoral support.

The data collected to test for the first possibility are quantitative data that accurately measure the contract's economic value. Economic data such as dollar value, percent change in price, number of firms competing for the contract, and the consumer price index are among the data used to measure the economic influences on the contract award. If analysis finds significant relationships between some of these data and the contract award, then it is reasonable to infer the agency's actors are seeking low-cost inputs. If none of these data are found to explain contract award then it is reasonable to infer other factors influence the contract award, and political influence could be one of those factors. However, the test for political influence will not be performed by default. Rather explicit measures are developed to test for the political influence.

The data collected to test for political influence are an accurate representation of the political relationships and political context within which the agency operates. Political data such as term of officeholder, administrative discretion, and location of the firm are among the data used to measure the likelihood of political influence. If the analysis finds significance between some of these data and the contract award,

then it is reasonable to infer the agency's actors are using their influence to target contracts as political benefits. If none of these data are found to explain the contract award, then it is reasonable to conclude that no political influence was exerted in the awarding of the agency's contracts.

## D. Modeling the Behavior of Actors in the Contracting Process

Many important elements for testing the general research hypothesis of who wins government contracts and why they win have been explained up to this point. We know that both the market and nonmarket processes are flawed and that procurement regulation is needed to simultaneously correct for both kinds of flaws; we know distributive and urban politics are the prevailing theories being used to explain the agency's contracting decisions; we know the actors, their motives, and patterns to explain their most likely influence; and we know how to measure the association between the actors. However, we need to know three more associations. First, we need to know how the actors will most likely behave when influencing contract decisions. Second, we need to know how the actors affiliate. Third, we need to how to interpret their behavior. The first concern is answered by behavior signs of consensus and conflict; the second concern is answered by cozy triangles; the third concern is answered by the policy model or the self-interest model.

1. Conflict and consensus

This study uses the behavioral signs of conflict and consensus among the agency actors to make inferences regarding the actors's intentions. Johnson (1993) provides a basis for interpreting consensus and conflict among politicians and bureaucrats, and Johnson's detailed explanation of conflict and consensus includes a description of the actors' intentions. This description provides the foundation for interpreting the behavior of the actors. Regarding consensus, Johnson claims that opposing viewpoints are not being considered by the politicians and bureaucrats. Regarding conflict, Johnson claims that bureaucrats are shaping policy not endorsed by politicians.

The knowledge of the intentions behind consensus and conflict will help us understand who wins the agency contracts and why, and will help us understand which type of objective is attained by the contract award. The longitudinal nature of the research design covers time periods during which conflict and consensus ought to occur. The agency's contracting events included in this study cover a ten-year period from 1982 to 1992. This period also includes four different political regimes and includes the political and administrative careers of over 65 politicians and bureaucrats. Chart V on page 66 illustrates the different political regimes and the varying period of consensus and conflict, and Appendix G identifies all the mayors and agency actors along with their term in office. The longitudinal nature

of this study, the different regimes, and the array of actors are sufficient to make inferences regarding consensus and conflict among the actors and to establish the existence and operation of any special relationship among the actors which is inferred by such behavior. i.e., cozy triangles.

## 2. Cozy triangles[10]

Politicians and bureaucrats consent and conflict for a reason. Scholars believe that consensus is best explained by the presence of a mutually supportive relationship among actors or groups of actors called "cozy triangle." A cozy triangle is when the politician, bureaucrat, and special interests all work together to control an agency's decision making process. A cozy triangle is defined as a unique type of policy subsystem or subgovernment that is generally attributed to government procurement. In fact, the relationship described as a cozy triangle is one of the most attractive and coherent explanations of the government procurement process. When conflict occurs, scholars believe that there is no cozy triangle present in the procurement process under question.

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[10]In his quotes, Gardner intentionally implies something corrupt or sinister with cozy triangles. I discuss cozy triangles because some people believe that these relationships explain a firm's success in government contracting. However, I do not investigate corruption at the agency in this study. Rather, my investigation uses two non-sinister explanations, the policy and self-interest models, and I provide a set of non-sinister reasons for a firm's success in government contracting on pages 72 and 73. The terms "iron triangle" and "policy subsystems" are also used to describe the persistent relationships among actors.

The rational actor model explains why the different actors will form a cozy triangle. The expectations of a rational actor justify the risks in forming this exclusive relationship, because each member of the cozy triangle will maximize their own self-interests. Each actor has similar, but selfish motives for forming this secret relationship: The bureaucrat gains job security and bigger budgets; the politician begets electoral support; the private firm gains a competitive advantage and dominates the government's market for a particular product or service much like a monopoly. In addition, all three actors understand the need for support from the other two actors. The interdependency among the actors is succinctly described as cozy triangles. At a 1971 meeting of the Senate Government Operation Committee, John W. Gardner, founder of Common Cause, described cozy triangles.

> Cozy triangles are "the mutually supportive relations among government agencies, interests groups, and the legislative committee or subcommittee with jurisdiction over their areas of common concern. Such coalitions constantly exchange information, services, and money (in the form of campaign contributions from the interest groups to the members of the legislative committee and budget approval from the committee to the agency.) As a whole, they tend to dominate policy making in their areas of concern. The triangles are considered to be as strong as iron, because the supportive relations are so strong that others elected or appointed to control administrative policy as representatives of the public's interest are effectively prohibited from interfering on behalf of the public. (Shafritz, 1988, p.148).

Gardner goes on to explain that cozy triangles are maintained not only for their ability to maximize the actors' own self-interests, but also because the actors have worked hard to

establish the triangle and don't want to lose the control. Clearly, cozy triangles gain power over time as each actor realizes the benefits of such an exclusive, insider-type, relationship. Gardner aptly expressed the desire for cozy triangles to remain durable.

> "As everyone in this room knows but few outside Washington understand, questions of public policy ... are often decided by a trinity consisting of (1) representative of an outside body, (2) middle level bureaucrats, and (3) selected members of Congress, particularly those concerned with appropriations. In a given field, these people may have collaborated for years. They have a durable alliance that cranks out legislation and appropriations on behalf of their special interests. Participants in such durable alliances do not want the department secretaries strengthened. The outside special interests are particularly resistant to such change. It took them years to dig their particular tunnel into the public vault, and they don't want the vaults moved." (Shafritz, 1988, p.148)

This study tests for both the presences of a cozy triangle and the endurance of that relationship. The presence of a cozy triangle will be inferred when the contract awards are explained by both the political and bureaucratic actors and other political factors. The enduring nature of cozy triangles will be tested by the longitudinal nature of this study which covers four mayoral terms. Each mayoral term ought to abruptly end any cozy-triangle relationship only to begin a new one.

Johnson also offers pertinent insights regarding the nature and operation of cozy triangles. She explains why cozy triangles form and break-up, the kinds of benefits provided to members of

the triangle, and links cozy triangles to distributive politics. Johnson states that cozy triangles operate at the subgovernment level where government distributes tangible and easily desegregated benefits to individuals, and she claims that the cozy triangle works best when there is consensus among all members. Johnson's explanation of the actors' behavior provide a basis for interpreting the results of the statistical analysis.

> Subgovernments dominate in distributive policies[11], policies subsidizing private activities that are supposed to be desirable to the entire society ... because the policies provide tangible and easily desegregated benefits to individuals, groups, or corporations engaged in these activities. (Johnson, p.7)

> Consensus arises because opposing viewpoints are not represented in the political process and thus cannot break-up the 'cozy triangle' of (politician, bureaucrat and private firm)...all promoting policies in their own self-interest. (Johnson, p.8)

Johnson claims that consensus represents the strength of the cozy triangles, and conflict is an indication that the cozy triangles are being fractured. Johnson identifies the core reason for conflict and the consequential break-up of cozy triangles.

> [Conflicts arise with the weakening of subgovernment...iron triangles of the 1940's and 1950's have weakened, and that one of the major reasons is the 'rise to prominence of contentious new interest groups' organized around ideological causes. (Johnson, p.10)

Johnson's explanation of a cozy triangle is the basis for interpreting the results of the statistical analysis. In particular, her explanation of the actors' behavior in terms of

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[11]Johnson's use of the term distributive policies is essentially the same as distributive politics described earlier in this chapter.

consensus and conflict provides a sound basis upon which to interpret the actors' intentions. In addition, her description of subgovernment as the location where governments provide "tangible and easily desegregated benefits" is especially appropriate to this study, because the contracting process is a subgovernment process, and the nine actors under study include personnel from the subgovernment level to the higher levels of administrative and political influence.

Finally, Johnson's explanation regarding the break-up of cozy triangles upon the entry of "contentious new interest groups" can be directly applied to this study, because the ten-year period under study includes four mayoral terms and three transitional periods between the four different mayoral terms. Each mayoral term was "contentious" as compared with the previous one. Mayor Byrne was the first woman to occupy the mayor's office and the first candidate to win against the "Machine Politics" of the Daley-era. Harold Washington was the first African-American mayor of Chicago and gave his community direct influence over city business for the first time in the city's history. Following the sudden death of Mayor Washington, the interim mayor, Eugene Sawyer, who was appointed to serve the remaining portion of Mayor Washington's term, was petitioned by many interest groups, but won the appointment through the support of anti-Washington forces. Mayor Sawyer's failure to win election provided evidence of mixed loyalties and turmoil during

his brief term. Finally, in 1991, control of the mayor's office returned to a member of the original Richard J. Daley-era political camp through the election of his son, Richard M. Daley. These relationships are illustrated in Chart V, on page 66. Chart V identifies four periods of consensus and three periods of conflict covered by this study.

CHART V: MODELING CONFLICT AND CONSENSUS DURING THE RESEARCH PERIOD

| | MAYOR | CHAIRMAN | PRESIDENT | POLITICAL STAGE | PERIOD | DATES |
|---|---|---|---|---|---|---|
| 1981 | BYRNE | BARNES | SCHUSTER | | | |
| 1982 | BYRNE | BARNES<br>CARDILLI | SCHUSTER<br>FORD | | | 5/21/82 |
| | | | | **BYRNE'S REGIME** | **CONSENSUS** | |
| 1983 | BYRNE<br>WASH. | CARDILLI | FORD | | | 4/15/83 |
| 1984 | WASH | CARDILLI | FORD | *TRANSITION PERIOD #1* | CONFLICT | |
| 1985 | WASH | CARDILLI | FORD | | | |
| 1986 | WASH | CARDILLI<br>CLARK | FORD<br>PAASWELL | | | 2/1/86 |
| | | | | **WASHINGTON'S REGIME** | **CONSENSUS** | |
| 1987 | WASH<br>SAWYER | CLARK | PAASWELL | | | 3/15/87 |
| 1988 | SAWYER | CLARK<br>BURRUS | PAASWELL | *TRANSITION PERIOD #2* | CONFLICT | |
| 1989 | SAWYER | BURRUS | PAASWELL<br>FORD | | | 6/15/88 |
| | | | | **SAWYER'S REGIME** | **CONSENSUS** | |
| 1990 | SAWYER<br>DALEY | BURRUS | FORD<br>SAVAGE | | | 4/15/90 |
| 1991 | DALEY | BURRUS | SAVAGE | *TRANSITION PERIOD #3* | CONFLICT | |
| 1992 | DALEY | BURRUS | SAVAGE<br>BELCASTER | | | 2/1/92 |
| | | | | **DALEY'S REGIME** | **CONSENSUS** | |
| 1993 | DALEY | BURRUS | BELCASTER | | | |

Note: see Appendix C for definition of period of consensus and period of conflict.

3. Actors' intention: self-interest versus policy model

Consensus and conflict are telling signs of the presence of cozy relationships[12], but in order to accomplish the objectives of this study, it is not sufficient to find only consensus or conflict in the joint behavior of the actors. Rather the objective is to determine whether the agency's contracting process is contributing to the agency's primary goal of low-cost transit or whether the agency's contracting process is distributing contracts to only special interest groups in the form of political rewards. To accomplish this objective, another linkage needs to be established between behavior of actors and decisions of the contracting process. Johnson also provides this linkage by proposing an association between conflict and consensus and two models identified as the self-interest and public model. Both models are briefly described by Kenneth J. Meier.

> The self-interest model is based on the premise that all policy actors pursue their own self-interest; bureaucrats seek larger budgets, interest groups seek more services (contracts), legislators seek more votes...the policy model...holds that these actors have specific policy goals based on her assessment of good public policy.
> (Johnson [Meier], book forward)

Does the self-interest model with the consequential development of cozy relationships explain the outputs of the agency's

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[12]For the purposes of this study, a cozy relationship is equivalent to a cozy triangle. Both terms are used interchangeably in literature. Cozy triangles connotate an institutional-type arrangement while cozy relationships connotate associations among actors. The second connotation is preferred for this thesis.

contracting process or does the policy model with the consequential output of low-cost goods and services explain the contracting behavior of the agency's actors? Johnson concludes that the policy model will lead to conflict between the bureaucrat and the politician, and she explains a set of hypotheses that can be drawn from an understanding of the adversarial relationship between politicians and bureaucrats. These hypotheses are consistent with the general hypothesis of this study.

> Like the self-interest model, the policy model's assumptions yield a clear set of hypotheses about the extent and emergence of conflict...these hypotheses draw a very different picture of the relationship between an agency and its authorizing committees than the self-interest model. ... First, there is no reason to assume that conflict is rare; to the contrary, conflict is inevitable. ... Second, conflict will be raised by insiders as well as outsiders ... Third, when conflict arises, it will not disrupt the standard decision-making procedures of the agency and committee ... The subgovernment will manage the conflict in the sense that it will prevent it from affecting all other issues. It will discover ways to make decisions even when facing conflict on an overarching policy issue. The system will be loosely coupled, rather than tightly knit as in the self-interest model. ... Fourth, across agencies there will be more similarities in relationships with committees in the policy models than in the self-interest model. (Johnson, p.18-19)

The behavioral signs of consensus and conflict provide a foundation for this analysis, because consensus and conflict presents a systematic approach to analyzing the distributional decisions of the agency's actors in control of the contracting process. Table I summarizes the set of related concepts inferred via the signs of conflict and consensus.

TABLE I: INFERENCES REGARDING CONFLICT AND CONSENSUS

| Behavior between politician and bureaucrat | Most likely relationship among the agency actors | Most likely intention of the actors | Most likely operative environment supported by the actors | Most likely use of the contract award decision |
|---|---|---|---|---|
| CONFLICT | INDEPENDENCE | PUBLIC GOOD | COMPETITIVE | LOW-COST INPUTS |
| CONSENSUS | COZY RELATIONSHIP | SELF-INTEREST | RESTRICTIVE | POLITICAL BENEFITS |

Consensus and conflict will be measured via the changing of the successful contractor and the change in actors. Independence and cozy relationships will be measured by modeling the change in actors. A competitive environment will be measured in terms of the number of firms and prices while a restrictive environment will be inferred as most likely when a competitive environment is not found. The data analysis provides the basis to infer whether the public good model through low-cost inputs or the self-interest model though political benefits best explains the agency's contracting process.

## III. OVERVIEW OF PROBLEM & OVERVIEW OF RESEARCH DESIGN

### A. Overview of the Problem

Politicians and bureaucrats are under constant pressure to explain their actions. They must explain why they voted a certain way, why they approved a major project, why they hired a key staff member, or why they awarded a contract. Elected officials must document their decisions and voluminous documents are made public record for the people to audit. In spite of this monitoring system, the public fails to trust that government officials' decisions have a fiduciary basis. This study investigates one type of policy decision: contract awards. The thesis provides an in-depth analysis of the factors that may influence government officials when they make contract award decisions. The purpose of the analysis is to better understand which factors have the most impact on their decisions.

This study investigates two competing explanations for the awarding of contracts[13]: (a) the policy model where the low-

[13]There are four possible explanations for contract awards: (1) firms submitting the lowest overall bid price win the contract, (2) firms with the most political influence win the contract, (3) firms included under advantageous purchasing policies extended to firms owned and operated by a disadvantageous, minority person win the contract, and (4) the market determines competitiveness within each industry and determines which firm wins the contract. This research develops a model to investigate three possible explanations: low-bidder, political-influence, and minority-owned business explanations. The minority-owned business explanation is included in the models as an explanatory variable under the self-interest model and the effect of the market is controlled by the selection of the sample. Chapter IV explains how the sample of contracting events reduces or eliminates market segments with little or no competition.

bidder wins the contract or (b) the self-interest model where a politically favored contractor wins the contract. Government regulation directs an agency to award contracts to the lowest-overall-bidder and the regulations provide detailed guidelines to support this directive. Conversely, the public suspects that politicians and bureaucrats influence the contracting process to benefit their friends. The intentions of the agency's actors are at the core of this controversy. In spite of the public's effort to regulate, investigate, and monitor an agency's contracting process, doubt still remains. The research is intended to reduce this doubt.

## B. Overview of the Research Design

The research uses change in the contractor who receives a CTA continuing contract as a surrogate measure of the collective intention of the agency's contracting process. Change in contractor is a valid measure of CTA intention because we know change is not isolated from other related events. For example, ambient temperature, atmosphere pressure, and humidity are all related factors because they are part of the same ecological system; when any one factor changes we know the other two factors will also change and in a predictable way. This study design follows the same logic. All factors used to describe the agency's contract decisions are from the same contracting process. If one factor changes, others and particularly the contractor, can be hypothesized to change as well.

1. Response variable

Change in contractor is the response variable. The incumbent contractor represents a *status quo* which is resistant to change. Dynamic forces are generally required to overcome the power of *status quo*. In the set of contracts under study, the *status quo* ought to give the advantage to the incumbent contractor for the following reasons:

A) The incumbent contractor

1. Knows the real price of producing the good or service.
2. Knows how the product is actually used.
3. Knows the profit margin that the agency has allowed the firm in the past.

B) The using department

1. Likes the product or service the firm produces--to change would increase uncertainty that the product would be as good or better.
2. Is friendly with the supplier.
3. Has to do less of a search process to stay with the present product and supplier.

C) The elected politician

1. Knows that the incumbent contractor is a political supporter.

2. Knows that the incumbent contractor makes campaign contributions.
3. Knows that the incumbent employs his constituents.
4. Is uncertain that another contractor would support him or employ constituents.

On the other hand, when the incumbent contractor changes, we can expect a set of related factors to also change. These factors are the bases for testing the research hypothesis. If the change in contractor is explained by a set of economic factors, then we can infer that the agency actors are seeking low-cost input to serve the public good. If the change in contractor is explained by a set of political factors, then we can infer that the agency actors are seeking political benefits to favor their allies. This study will critically examine a set of political factors and economic factors posited to measure the political, the bureaucratic, and economic influence on the agency's contracting process.

The response variable is a binary variable and measures change in contractor. Zero is used to indicate no change in contractor (i.e., the incumbent wins the subsequent annual-order contract) and "1" is used to indicate that a new contractor won the annual-order contract (i.e., a challenger has won the subsequent contract award).

## 2. Explanatory factors and variable description

Forty-seven variables are used to measure the five political factors and five economic factors used in this study. Several variables are used to measure each political and economic factor. Chapter V provides a detailed description of the variables used in this study. The present description provides a general understanding of each factor and the variables used to measure the factor.

### a. Economic factors

The variables used to measure the policy model's economic factors are numerical values that represent competition for the agency's contracts and pressure from the market.

#### 1. Financial aspects factor.

The financial strength of the firm is an important economic factor for this analysis, and this study posits that money ought to predict success in government contracting. In order to test the effects of money on success in government contracting, two measures of the firm's financial strength are used. The first variable measures the total dollars actually paid to the firm during the year in which the contract was awarded to the firm. The second variable measures the actual dollar value of the contract being awarded to the firm.

2. Low-bid position factor.

Two variables are used to measure the relative bidding position of the firm. The first variable is binary and identifies whether the successful firm was the lowest-overall-bidder or whether the successful firm was other-than-low-bidder. One is used to indicate that the successful firm submitted the lowest-overall-bid and "0" is used to indicate that the successful firm submitted an other-than-low-bid. The second variable used to measure the low-bid position factors is a continuous variable and is the percent the price of the successful firm is below the price submitted by the next lowest bidder.

3. Price and CPI change factor

The widespread use of economic indices attest to their ability to predict economic changes. This study includes three variables to measure economic change, and posits that any one or all of the variables ought to predict change in contractor.

The first variable is the percent change in the consumer price index between contract years. The second variable is the percent change between annual contract prices. The third variable is the percent difference between the consumer price index and the percent change in contract prices. This study uses both the actual and absolute values of these price changes.

4. Competition factor.

Competition is a principal factor under study. Three primary variables are used to measure competition for the agency's contracts: the number of firms solicited by the agency, the number of firms responding to the solicitation, and the number of firms actually submitting a price proposal. All three variables are principal measures of competition.

Competition is also measured by a second set of variables calculated from the three primary variables mentioned above. The second set of variables is ratios created by dividing the number of firms responding to the solicitation and the number of firms submitting a price proposal by the number of firms solicited. In addition, a third ratio is created by dividing the number of firms submitting a price proposal by the number of firms responding to the solicitation. All six variables measure the degree of competition for the agency's contracts.

5. Firm's pricing tactics factor

In a highly competitive market, we believe that a firm will use every means at their disposal to win a contract. Four competitive pricing tactics are measured: (a) firm bid price for term of contract, (b) offer of a discount for early payment of invoices, (c) both (a) and (b) measures combined into a third measure called advantageous pricing terms, and (d) the actual percent discount offered for early payment of an invoice.

b. Political factors

The variables used to explain the five political factors of the self-interest model include the following:

1. Location factor

The location of each contractor is identified, and the location is given a numerical value. Five numerical values are used to indicate the political value of the contractor's location. Zero is used to indicate that the firm is out-of-state and has very low political value relative to the agency's location in the City of Chicago while 4 is used to indicate the firm is located in a city of Chicago ward with very high political value because its alderman always supports the incumbent mayor.

2. Regime: political value of era factor.

A regime is the period of time during which the same person holds the office of mayor for the City of Chicago and both the chairman of the Transit Board and president of CTA are the mayor's choice. The mayor's regime is measured in days, and this study develops two different measures of the political value of the regime or era. The first measure assumes that the political power of a mayor's regime will increase as a function of time (i.e., the political value of the mayor's era will increase as his or her days in office increase). This assumption is used to

test whether an increase in the mayor's political power value explains a change in contractors.

A second measure of the mayor's political value is used to identify whether the contract was issued during the presence of a mayor's political regime or during the transition period between mayoral regimes. Chart V on page 69 is used as the guide for determining whether the contract was awarded during the mayor's political regime or between mayoral regimes.

3. Change of elected and appointed officeholders factor.

There are nine politicians and bureaucrats under study. The change of these actors is measured at three different levels: One measure is at the individual level and two measures are at the group level. The primary data are used to register the change of the individual actor between consecutive annual-order contracts for the same product or service. Zero is used to indicate no change of the actor between consecutive annual-order contracts, and one is used to indicate change of actor between consecutive annual-order contracts.

Two measures are created from the primary data to measure the change among groupings of individual actors identified in Chart II and Chart III in Chapter II. I will use five variables to measure change in the groupings: politicians, political

mediators, bureaucrats, bureaucrats-in-purchasing, and bureaucrats-in-staff-management.

The second measure of the political and bureaucratic groupings assigns a weight to each actor as a function of their hierarchy position. For example, more weight is given to the change in mayor than to change in chairman or change in president within the politician's group, and in a similar manner, more weight is given to the change in vice president in charge of purchasing than is given to the change in purchasing agent or change in contract officer in their respective grouping. This weighing scheme produces eight categories ranging in value from 1 to 8. One indicates that none of the three actors changed since the previous annual-order contract award, and 8 indicates that all the actors changed since the previous annual-order contract award. I will use the term "cohesiveness" to identify this method of group measurement, and I will use three variables to measure change in the groupings: political cohesiveness, purchasing cohesiveness, and staff cohesiveness.

4. Administrative review time factor.

Time is probably the single most important factor under the control of bureaucrats and politicians. Political allies can expect to get their contracts in less time than those firms who have no political alliances. While those firms who are political adversaries to the incumbent politicians will have their contract

delayed or never receive a contract regardless of their bid price or their patience.

This study measures time between six critical milestones during the agency's contract process. This measurement segments the contract process into five meaningful decisionmaking phases: (a) pre-bid and bid solicitation, (b) bid evaluation, (c) review by purchasing agent, (d) executive staff's approval of the contract recommendation, and (e) contract execution by the chairman of the Transit Board. Time is measured in the actual number of days for each phase of the contracting process. The analysis uses both the actual number of days and calculates the ratio of days required for each phase to the total days required for the total contracting process.

5. Contract justification factor.

A contract recommendation is a written report prepared by the contract officer for the review and approval by the purchasing agent and other executive management. The contract recommendation is a written explanation to support and justify the contract award to the Transit Board. The written recommendation provides a surrogate measurement of administrative discretion exercised in the particular contract award decision. A short explanation is generally used to justify the award of a contract to the lowest-overall-bidder for the annual-order contracts under study, whereas a longer explanation indicates

that factors other than price were considered in the award of the contract. There are two different measures for this variable. The first measure counts the actual number of lines in the contract recommendation's supplementary remarks section. The second measure codes the remarks section of the contract recommendation as simple or complex. A simple contract recommendation provides only the price difference between bidders and consecutive contract prices and may state that the award is being made to the lowest responsive and responsible bidder. A complex contract recommendation provides a longer explanation to justify the contract award and usually includes the discussion of non-price related factors used for the contract award decision.

The administration of the agency's DBE[14] policy is the third measure of the discretion exercised by the agency's politicians and bureaucrats. The DBE policy administration is measured by recording the agency's output decision of whether the contract award was made to a non-DBE firm or a DBE firm regardless of whether the firm won the contract as the incumbent or the challenger. Table II lists the economic and political factors used to measure the policy and self-interest models. The table summarizes the related explanatory variables for each factor, and provides the variable number and name for each variable that will be used in later chapters.

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[14]DBE means Disadvantaged Business Enterprise and is a minority-owned or woman-owned business. See Appendix D for the full text of the agency's policy towards DBE participation in the agency's contracts.

TABLE II: SUMMARY OF EXPLANATORY VARIABLES

| POLICY MODEL | | |
|---|---|---|
| ECONOMIC FACTORS | VAR. NO | VARIABLE NAME |
| FINANCIAL ATTRIBUTES | V7<br>V28 | annual sales to the agency<br>authorized contract expenditure |
| LOW-BID POSITION | V9<br>V10 | low-bidder<br>percentage-low-bidder |
| ECONOMIC CHANGE | V24<br>V24A<br>V33<br>V34<br>V34A<br>V39<br>V39A | contract price change<br>absolute value of V24<br>consumer price index (CPI)<br>contract price change-CPI<br>absolute value of V34<br>contract price variance<br>absolute value of V39 |
| COMPETITION | V11<br>V12<br>V13<br>V36<br>V37<br>V61 | number of firms solicited<br>number of firms responding<br>number of firms bidding<br>ratio V12/V11<br>ratio V13/V11<br>ratio V13/12 |
| PRICING TACTICS | V27<br>V26<br>V38<br>V52 | fixed-bid-price<br>terms-of-payment<br>advantageous pricing terms<br>percent discount for early payment |

TABLE II: SUMMARY OF EXPLANATORY VARIABLES (continued)

| SELF-INTEREST MODEL | | |
|---|---|---|
| **POLITICAL FACTORS** | **VAR. NO.** | **VARIABLE NAME** |
| POLITICAL VALUE OF LOCATION | V5<br>V64<br>V54 | firm's location - 1990 census<br>firm's location - 1980 census<br>total weight of location |
| POLITICAL VALUE OF TIME | V6<br>V58 | presence of a political regime<br>power of the political regime |
| CHANGE IN POLITICAL ACTORS | V40<br>V41<br>V56 | political actors<br>political mediators<br>political cohesiveness |
| CHANGE IN BUREAUCRATS IN PURCHASING | V47<br>V57 | bureaucrats in purchasing<br>purchasing cohesiveness |
| CHANGE IN STAFF BUREAUCRATS | V42<br>V48<br>V63 | agency-bureaucrats<br>bureaucrats: staff management<br>staff cohesiveness |
| CONTROL OF CONTRACT PROCESSING TIME<br><br>(Note: TDAYS1, TDAYS2, TDAYS3, TDAYS4, TDAYS5 AND TIME10 are measured absolute value of the actual number of days for phase indicated. TR1, TR2, TR3, TR4, TR5 represent the ratio of each phase as a fraction of the total amount of time to process the contract) | TDAYS1<br>TDAYS2<br>TDAYS3<br>TDAYS4<br>TDAYS5<br>TIME10<br>TR1<br>TR2<br>TR3<br>TR4<br>TR5 | pre-bid & bid solicitation<br>bid evaluation<br>review by purchasing agent<br>executive staff's approval<br>contract execution<br>total time in days<br>ratio: TDAYS1:TIME10<br>ratio: TDAYS2:TIME10<br>ratio: TDAYS3:TIME10<br>ratio: TDAYS4:TIME10<br>ratio: TDAYS5:TIME10 |
| CONTRACT JUSTIFICATION | V65<br>V25<br>V53 | DBE policy administration<br>simple or complex remarks<br>number of lines in remarks |

### 3. Statistical analysis

Logit analysis is the principal statistical method used to analyze the data and to develop a multivariate regression model to explain the simultaneous influence of both the policy and self-interest models.

## IV. POPULATION OF AGENCY'S CONTRACTS EVENTS AND SAMPLE SELECTION

The population of contracts under study is all the contracts issued by the CTA during the 1980s and early 1990s. This chapter examines all contracts made by the agency during that time period, explains the basis for sample selection, identifies the commodities included in the sample, and provides a detailed listing of the contracts included in the sample.

### A. Overview of the Contracts

The population of CTA contracts is as diverse as any other government agency's. The diversity is reflected in the number and value of contracts, the number of contract officers, and the array of commodities being purchased. At any given time, the CTA has 30,000 active contracts representing nearly $700 million of goods and services. Generally, 20 different contracting officers are responsible for these purchases, which represent hundreds of different commodities. However, the diversity of contracts can be simplified by categorizing the contracts as either annual-order contracts or one-time-fixed-quantity contracts. Three characteristics distinguish annual-order contracts from one-time-fixed-quantity contracts: (a) type of product or service purchased, (b) predictability of demand for the products and services, and (c) source of funding.

Annual-order contracts cover the purchase of regularly used commodity-type products and services that are needed by the agency to provide daily transit services. Annual-order contracts cover the purchase of commodity-type products such as salt, fuel, paper, filters, glass, printing, and chemicals as well as cover many basic services such as lab testing, cleaning, repair, security, rental services, and delivery services. The agency's need for these products and services is predictable and routine reflecting the routine of providing daily transit services. Annual budgets to purchase these products and services are easily established based on the previous year's usage.

The agency seeks competitive bids for the annual-order contracts on a yearly basis[15]. Bids are solicited for contracts valued over $5,000 each year by mailing a bid solicitation package to the incumbent contractor and other interested firms in addition to publishing a public notice in the newspaper. Since the need is predictable and routine, practically no change is made in the bid solicitation from year-to-year[16]. Generally, purchasing practice recommends that annual-order contracts not be

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[15]In general, purchasing practices recommend that annual-order contracts not be for longer than one year. CTA follows this general purchasing practice, and the vast majority of annual contracts are for a one-year period. However, multiple year contracts are made when the agency determines that it is to their advantages. When multiple year contracts are made, it is almost for always for a two year period. Less than a dozen multiple year contracts for longer than two years have been issued by CTA and these contracts were eliminated by the sample.

[16]Consecutive annual-order contracts with significant revisions were eliminated by the sample. Only several annual-order contracts were eliminated from the sample for this reason.

for longer than one year, because firm, not escalated, contract prices are difficult to obtain for contracts with longer periods. However, two-year or longer requirements are made whenever the agency determines there is a pricing advantage.

The agency also seeks bids for one-time contracts. One-time contracts cover the purchase of products or services that are not purchased by the CTA on a regular basis. One-time contracts cannot provide a common basis for analyzing purchasing behavior. Examples are the purchase of new and repair construction, new and replacement equipment, custom designed equipment and services, consulting services, and the purchase of goods and services on an emergency basis. Purchases of the same product or service may not be repeated for several years or even decades, and many events may intervene between contracting events which change the nature of the purchase from the previous contracting event.

The third characteristic that distinguishes the two types of contracts is the source of funding. Annual-order contracts are normally funded by operating funds whereas most one-time contracts are funded with federal and state grant money[17]. This distinction is important because the source of funding determines the degree of autonomy the agency has when making contract

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[17]In general, the CTA receives operating funds from the collection of fares and through a regional sales tax collected by the state and given to the Regional Transportation Authority for distribution to the CTA as well as to Metra and Pace. Federal and state grant money generally funds specific capital improvements construction projects or the purchase of major equipment or trains and buses.

decisions. The agency can exercise the greatest amount of discretion when spending operating funds, and the least amount of discretion when spending federal and state grants even though all agency contracts are subject to the federal and state procurement regulations.

While annual-order contracts and one-time contracts differ in purpose and function, an important characteristic common to both types of contracts is an issue surrounding the contract's dollar value. The contracts' dollar value determines the type of bid solicitation method used to obtain competitive prices whether the contract is an annual-order contract or a one-time contract. When the estimated contract value is less than $5,000[18], an informal bid solicitation method is used to seek competition. The informal method means the bid solicitation is not advertised in the newspaper and the purchase does not need the approval of the agency's board of directors before issuance of a contract. When the estimated value is greater than $5,000, a formal bid solicitation, evaluation, and approval process is used by the agency. The formal process includes public advertisement of the requirement, a formal written contract award recommendation, the approval of the agency's board of directors, and execution of the contract by the chairman or his designee.

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[18]During the late 80's, the Transit Board authorized an increase in the dollar value to $10,000. This change does not affect the methodology, findings or conclusions of this research

Table III shows an overview of all active[19] annual-orders and one-time contracts during September 1990 and categorizes the contracts by sources of funding and dollar value.

TABLE III
OVERVIEW OF ACTIVE CONTRACTS
SEPTEMBER 1990[20]

| TYPE OF CONTRACT VALUE AND FUNDING SOURCE | NUMBER OF CONTRACTS | ESTIMATED TOTAL DOLLAR VALUE |
|---|---|---|
| Annual-Orders > $5,000 Operating Funds | 745 | $306,356,000 |
| One-Time Contracts > $5,000 Operating Funds and Federal Funds | 220<br>164 | $ 15,954,000<br>$340,813,000 |
| One-Time and Annual-Order Contracts < $5,000, including both operating and federal funds. | 28,153 | $ 53,593,000 |
| TOTALS | 29,282 | $716,716,000 |

Table III illustrates that the majority of the contract dollars are for contracts with dollar values in excess of $5,000, and over 40% of the agency's contract dollar value is overmoney annual-order contracts. The agency's purchasing department re-bids 400 to 500 annual-order contracts each year, and there are generally 700 to 800 overmoney annual-order contracts active at

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[19]An "active contract" if an annual order contract or purchase order that remains on the agency's database as long as payment or deliveries are still needed. Even though the time may have elapsed or the money expended. A contract remains open until the last invoice has been paid to the contractor.

[20]The data in this table is based on a computer printout of all active contracts. The report is generated from the agency central computer system and is dated September 28, 1990. The computerized report individually lists all over $5,000 active annual-orders and one-time contracts.

any given time. The number of active annual-order contracts at any given time represents $300 to $400 million of goods and services and cover approximately a two-year period. The CTA's annual operating budget is approximately $800 million. Consequently, annual-order contracts represent a major portion of the agency's total and routine expenditures. The contracting activity reveals that federal-funded and state-funded one-time contracts are funded equally, but do not fund the same commodities.

In addition, annual-order contracts became more popular at the agency during the period of the study. During the early 80's, the agency was maintaining 500 to 600 annual-order contracts. However, during the late 80's and early 90's the total number of active annual-orders increased to approximately 1,000. The agency had clearly adopted the annual-order as a favorite method of procurement. Table III illustrates the solid foundation that annual-orders provide for the longitudinal nature of this study. Table IV summarizes the distribution of overmoney and undermoney annual-order contracts as of September 1990. There were 2,227 annual-order contracts still on the CTA's database even though 1,262 annual-order contracts expired. The expired contracts remained on the database for any one or all of the following reasons: delivery not completed, payment of final invoice not made, or settlement of a claim by either the agency or the contractor.

TABLE IV
DISTRIBUTION OF ANNUAL-ORDER CONTRACTS, SEPTEMBER 1990

| Year Contract was initiated | (operating funds) Number of contracts on database | Number of Expired contracts | Number of active contracts |
|---|---|---|---|
| 1984 | 3 | 2 | 1 |
| 1985 | 4 | 3 | 1 |
| 1986 | 38 | 34 | 4 |
| 1987 | 339 | 330 | 9 |
| 1988 | 508 | 452 | 56 |
| 1989 | 853 | 438 | 415 |
| 1990 | 479 | 3 | 476 |
| 1991 | 3 | 0 | 3 |
| totals | 2,227 | 1,262 | 965 |

Table V provides the basis for estimating the total population of active annual-order contracts during the research period. Table V summarizes the agency's master list of annual-order contracts, and shows that more than 1,000 annual-order contracts had been created, but only about 817 annual-orders had a firm under contract and can be considered active contracts. Table V categorizes the population annual-order contracts during the period from 1989 to 1990 by identifying the number of competitively bid overmoney annual-order contracts, the number of over-money annual-order contracts made without seeking competitive bids, and the number of undermoney annual-order contracts. In addition, over 216 annual-orders are undermoney contracts and nearly 150 overmoney annual-orders were not competitively bid. Subtracting the undermoney and overmoney contracts from the total annual-order contracts leaves a total

number of competitively bid annual-order contracts at 453 for the one year period spanning 1989-90. Consequently, the total population of overmoney annual-order contracts during the 10-year span of the research period is estimated to be 4,000[21].

TABLE V
CATEGORIES OF THE ANNUAL CONTRACT POPULATION: 1989-90

| | |
|---|---|
| Total Annual Contracts Identified | 1026 |
| -Contracts where no firms are identified | (209) |
| Net active contracts | 817 |
| Undermoney contracts (not advertised) | 216 |
| Overmoney contracts (not advertised) | 147 |
| Competitively bid contracts (over $5,000) | 453 |

Table VI shows the distribution of annual-order contracts by dollar value and the number of annual-order contract awards to disadvantaged business enterprises (DBE). Table VI also provides an initial assurance that the annual-order contract population includes a sufficient variety of total contract values that is fairly representative of the business community. The agency actively enforces a policy of DBE participation in its contracting, and the evaluation of DBE participation is a part of the final contract award decision. Table VI reports that 18.5% of all annual-order contracts were awarded to DBE firms during

[21]Nine annual-order contracts are required to span a 10-year period. If all annual-order contracts were issued in a timely manner and for only a one-year period, the total population of annual-order contracts would be 4,056. In reality, multiple-year contracts would be issued when appropriate, and annual-order contracts would not always be issued in a timely fashion. In addition, fewer annual-order contracts existed during the early 1980's than the late 1980's. In light of these conditions, 4,000 contracting events is a reasonable most likely number of annual-order contracts during the research period.

1989-90; an analysis of DBE participation in the agency's annual order contracts will examined in Chapter VIII.

TABLE VI
DISTRIBUTION OF TOTAL ANNUAL-ORDER CONTRACTS BY DOLLAR VALUE AND THE NUMBER OF ANNUAL-ORDER CONTRACTS AWARDED TO DBE's

| Contracts listed by dollar value | Total Contracts Percent | Total Contracts Number of contracts | DBE Contracts Number | DBE Contracts % |
|---|---|---|---|---|
| $5,000 or less | 27.7% | 226 | 21 | 9.3% |
| $5,000-25,000 | 25.0% | 204 | 43 | 21.1% |
| $25,000-50,000 | 18.1% | 148 | 42 | 28.4% |
| $50,000-100,000 | 11.9% | 97 | 18 | 18.6% |
| $100,000-200,000 | 6.6% | 54 | 10 | 18.5% |
| $200,000-500,000 | 6.9% | 56 | 10 | 17.9% |
| $500,000-1,000,000 | 1.8% | 15 | 3 | 20.0% |
| over $1,000,000 | 2.1 | 17 | 4 | 23.5% |
| Total | 100.0% | 817 | 151 | 18.5% |
| Contracts with no information | | 209 | | |
| Total annual contracts | | 1,026 | | |

Note: Number of advertised contracts won by DBE's ..... 123
Sole source contracts won by DBE's (estimated)..... 28

Table VII provides a general measure of competitiveness for the agency's annual-order contracts. The data in Table VII was obtained from the agency's official bid response sheets used by the secretary of the board of trustees office of the agency. The sheets record the number of "responses" received for each annual-order contract. The "response" can be "no bid" or the submission of a bid price. At this general level of analysis, the data in Table VII show that more than 96% of the items submitted for competitive bid did receive competitive responses, and more than 88% received three or more competitive responses. This record indicates that the agency is successful in obtaining competition

when it seeks competition through public advertisement of the bid solicitation.

TABLE VII
NUMBER OF RESPONSES FOR
COMPETITIVE CONTRACTS
(1988 and 1989)

| Number of responses | Number of contracts | Cumulative percent |
|---|---|---|
| 1 | 16 | 100.0% |
| 2 | 33 | 96.4% |
| 3 | 50 | 88.9% |
| 4 | 57 | 77.5% |
| 5 | 62 | 64.5% |
| 6 | 60 | 50.5% |
| 7 | 47 | 36.8% |
| 8 | 45 | 26.1% |
| 9 | 26 | 15.9% |
| 10 | 12 | 10.0% |
| 11 | 13 | 7.3% |
| 12 | 8 | 4.3% |
| 13 | 4 | 2.5% |
| 14 | 2 | 1.6% |
| 15 | 1 | 1.1% |
| 16 | 1 | 1.0% |
| 17 | 1 | 0.7% |
| 18 | 1 | 0.7% |
| 19 | 2 | 0.5% |
| subtotal | 440 | |
| misc | 12 | |
| total | 452 | |

Previously, in Table IV, the distribution of all annual-order contracts was shown. Table VIII shows the distribution of active one-time overmoney contracts funded with CTA operating funds. This category of contracts is much smaller in both number of contracts and total dollar value. As such, this category is too small to provide a comparable measure of contracting activity

to support a longitudinal study of a major agency. Clearly, overmoney annual-order contracts are a significant amount of the agency's contracting events using operating funds, and the repeat purchases of standardized goods and services holds constant all factors except price and the agency's contracting process. Both overmoney and undermoney annual-order contracts provide this feature, but approval of undermoney contracts does not require the concurrence of the CTA's executive management, does not require board approval, and does not require detailed documentation to support the evaluation. Due to a less formal approval process for the undermoney annual-orders, the undermoney contracts are eliminated from the population of annual-order contracts used for this study.

TABLE VIII
SUMMARY OF ONE-TIME CONTRACTS
FUNDED WITH CTA OPERATING FUNDS
(Computer report dated 9-28-90)

| Year of Initiation | Number of Contracts | Dollar value of contracts |
|---|---|---|
| 1986 | 2 | $ 35,000 |
| 1987 | 4 | $ 58,000 |
| 1988 | 50 | $ 7,428,000 |
| 1989 | 103 | $ 3,913,000 |
| 1990 | 61 | $ 4,520,000 |
| TOTAL | 220 | $ 15,954,000 |

In summary, annual-order contracts are the population of contract decisions best suited for the study of the agency's

contract decisions over the 10-year period covered by this study. Annual-order contracts have four characteristics that make them well-suited for this study.

(1) The same commodity is purchased each year, and this commonality provides the common dominator for comparing years. The standard commodity allows us to compare the agency's contract decisions between years and across the total research period.

(2) The annual-order contract population includes an array of different types of contract decisions. The variety of contract decisions included in the population of contract decisions provides greater support for any generalization from a sample drawn from that population than a sample drawn from a less diverse population of contract decisions.

(3) The repetitive characteristics of annual-order contracts allows us to develop more accurate predictions regarding the influence of factors that effect a change in contractor.

(4) Annual-order contracts represent routine and necessary goods and services needed by the agency to deliver low-cost transit services. Consequently, annual-orders are a direct measure of the agency's ability to purchase low-cost goods and services.

## B. Basis For Sample Selection

The sample will be drawn from the population of overmoney, annual-order contracts. The principal criteria for selecting a sample is the contract's commodity. The commodity is important because the sample must account for the variations that exist among different commodities and/or industries in order to be an effective overall measure of the agency's purchasing behavior. The sample must not be skewed by any one commodity or industry. For example, any one of the following four industry-related factors could bias the analysis:

(1) The effect of the national, regional and/or local economy on a particular commodity or industry differs. Periods of recessions and inflation do not equally affect all industries.

(2) The degree of competition varies by industry. Some industries tend to be fragmented and intensely competitive, while other industries are dominated by a few firms that have practically no serious competition.

(3) Internal economies of scale will vary greatly among firms in different industries. For example, services are generally labor intensive while manufacturing is capital intensive.

The research sample will include annual-order contracts for an array of commodities. The wide selection of contracts should eliminate or significantly reduce the above-mentioned biases and control for the influence of any one market. The sample will meet the following two criteria: (a) a wide array of contracts for different goods and services and (b) annual-order contracts that represent a wide range of dollar values to ensure that firms of all sizes are represented in the sample.

## C. Recommended Sample

The recommended sample is shown in Table IX. The annual-order categories are developed from a detailed review of all the agency's annual-order contracts. The sample fairly represents the array of commodities and the different dollar values of contracts issued by the agency under study.

TABLE IX
RECOMMENDED SAMPLE

| | Total Contract Value | under $5,000 | Sole Source | Bid | Total |
|---|---|---|---|---|---|
| | (in 000's) | | | | |
| Transit Revenue Equipment: | | | | | |
| (a) bus parts & service | $ 36,312 | 3 | 9 | 44 | 56 |
| (b) rail parts & service | 4,092 | 3 | 6 | 14 | 23 |
| Business Services only | $ 7,111 | 42 | 15 | 34 | 91 |
| Supply/materials only | $ 3,652 | 19 | 7 | 48 | 74 |
| Rental Contracts only | $ 2,575 | 14 | 10 | 17 | 41 |
| Commodities: | | | | | |
| (a) non-technical | | | | | |
| (1) paper | $ 1,140 | 2 | 0 | 6 | 8 |
| (2) printing | $ 660 | 3 | 1 | 9 | 13 |
| (b) technical | | | | | |
| (1) chemicals | $ 1,242 | 4 | 2 | 14 | 20 |
| (2) electrical | $ 1,584 | 10 | 2 | 23 | 35 |
| Totals | $ 58,368 | 100 | 52 | 209 | 361 |

Table IX shows that 209 annual-order contracts represent 9 different commodities purchased by the agency. Appendix E provides a detailed listing of these annual-order contracts and the number of contracts actually obtained for the sample. The actual sample used for this analysis includes 166 different annual-orders and 800 contracting events. The actual sample represents approximately 20% of all competitively bid annual-order contracts during the ten-year period under study.

# V. RESEARCH DESIGN

Chapter III provided an overview of the research design. This chapter discusses the two elements of the research design: the multiple regression model used to explain why contractors change and the definition and measurement method of each variable used in the regression model.

## A. Multiple Regression Model

The principal objective of the research design is to study a multiple regression model that explains why contractors change[22] by revealing the circumstances under which the incumbent contractor tends to win and to lose contracts. To achieve this principal objective, the research identifies two sets of explanatory variables to help explain the probability of change in incumbent contractor. One set of explanatory variables is economic factors and is intended to measure whether the agency is seeking low-cost inputs, i.e., the policy model as explained in Chapter II. The second set of explanatory variables is qualitative and quantitative factors that measure the degree of political and bureaucratic influence. The second set of factors is intended to measure whether politicians and bureaucrats

[22] In order to simplify the text, the word "change" is used to mean both the possibility of "no change" and/or "change" in the contractor.

influence the agency's contracting process for their own benefit, i.e., the self-interest model as explained in Chapter II.

The explanatory variables used in the multiple regression are either categorical or continuous variables. The response variable, change in contractor, is binary due to the phenomenon being measured. In government contracting, there are only two mutually exclusive possible outcomes from every competitive bid event: the incumbent contractor wins the award of the consecutive annual-order contract or the incumbent contractor does not win the award of the consecutive annual-order contract. The two possible contract outcomes are mutually exclusive and permit inferences regarding not only the incumbent contractor, but also inferences regarding the challenging firm; equally compelling explanations are developed simultaneously for both the challenger and incumbent firms to explain why they may or may not be successful in government contracting. Table X presents the general research model to be developed in this study.

TABLE X: GENERAL RESEARCH MODEL

$Pr(WIN=0) = B_0 + B_1PM + B_2SIM + U$, where

$Pr(WIN=0)$ = Probability of an incumbent firm winning the consecutive annual-order contract;

$Pr(WIN=1)$ = Probability of a challenging firm winning contract for an annual-order. [$Pr(WIN=1) = 1 - Pr(WIN=0)$].

PM = Five factors of the Policy Model as measured by 21 economic variables

SIM = Five factors of the Self-Interest Model as measured by 27 political and bureaucratic variables.

$B_0$ = Intercept

$B_1, B_2$ = Coefficients

U = The unexplained variance.

The foundation for the general research model is change. Change in contractor or the response variable is measured simultaneously with change in the explanatory variables. Change in contractor is obtained directly from the contract file and recorded through the use of a dummy variable where "0" indicates the incumbent contractor wins a consecutive annual-order contract, i.e., no change of contractor, and "1" indicates that

the incumbent contractor does not win the consecutive annual-order contract, i.e., a challenging firm wins the contract. All the explanatory variables offer an equally precise measurement. The null hypothesis regarding each measure will be rejected at any one of three different levels of significance: 0.10, 0.05, and 0.01, i.e., moderately significant, significant, and highly significant.[23]

The strength of an inference from any regression equation is a function of variable measurement. Does the data accurately measure the phenomenon at issue? I contend that the data collected for this research accurately measure the phenomena of the agency's contract decisions, and the variable definition section will support this contention.

All the explanatory variables are either precise measures of the factors that change between annual-order contracts or precise measures of events that change concurrently with the change between annual-order contracts. The measurement of all the explanatory variables is directly linked to the annual-order contracting events, and it is the annual-orders themselves that provide the principal reason for the accuracy of the measurements. Annual-order contracts are conducive to accuracy of measurement, because the contracts are renewed each year and

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[23]For a discussion of using the three levels of significance see Ott, p.232-33, Schlotzhauer, p. 128-129, and Hair, p.10-13.

the dates of contract renewal are measured to the day. These dates provide the framework by which to measure the explanatory variables, which are a combination of concurrent events and concurrent changes in events. Concurrent events include, for example, the actual dollar sales of the successful firm during the year of contract award, the number of firms bidding for the specific contract, the political value of the location of the successful firm at the time of award, and the presence of favorable contract terms and conditions. The general research model uses these variables to explain how the nature of the contracting event may cause the incumbent contractor to change. On the other hand, concurrent changes in events include, for example, change in the consumer price index between bid openings, change in contract price, change in political actors, or change in the bureaucratic actors. The general research model explains how concurrent changes in events may cause the incumbent contractor to change. The following section defines each variable, explains how each variable measures the related phenomenon, and states the hypothesized relationship between the variables and change in contractor.

## B. Variable Definition

This section is divided into three parts: (1) response variable, (2) explanatory variables of the five economic factors used to measure the policy model, and (c) explanatory variables

of the five political and bureaucratic factors used to measure the self-interest model.

1. Response variable

The response variable is change in contractor. The unit of measure is the firm, and a dummy variable is created to identify whether the same firm or a different firm wins the annual-order contract. The response variable is intended to measure two different kinds of winning events: (a) the incumbent contractor wins the annual-order contract for another year, or (b) a new firm or challenging firm wins the annual-order contract. Change in contractor data is collected from the annual-order contract file.

The change in contractor will be modeled as a probability of winning or losing under a given set of variables and/or factors. The general research model is used to model the relationship between the response and explanatory variables. Logit analysis determines the probability of one outcome as a function of the explanatory variables. The logit analysis models the response variable so that the factors under study will explain the probability of the incumbent winning a consecutive annual-order contract, i.e., Pr(WIN=0) (SAS, p1085, 1091). The probability of the other event, the challenging firm wins the annual-order contract, is found by a simple calculation in accordance with

probability theory for two mutually exclusive events, i.e., Pr(WIN=1) = 1 - Pr(WIN=0).

## 2. Policy model's five economic factors

The policy model uses five economic factors to explain whether the public good is being sought through the agency's efforts to obtain low-cost inputs: (a) financial factors of the firm and the contract award, (b) low-bidder position, (c) change in contract price and the consumer price index, (d) competition for the agency's contracts, and (e) two common pricing tactics.

### a. Financial aspects factors

Two financial variables are used as a measure of the financial factor of the contracting event: annual sales to the agency during the year of contract award and the authorized contract expenditure. Both financial variables are measured in actual dollars during the year of contract award and are not adjusted for inflation.

(1) Annual Sales to the Agency. Annual sales to the agency is the actual dollars paid by CTA to the successful firm during the year of the particular contract award, i.e., the firm's revenue from CTA. These data are collected from the CTA's accounts payable records. Actual sales of the firm are not only of general interest but are also the most important knowledge to

have about a firm. Sales are a direct measure of the firm's economic success in selling to CTA, and sales are an indirect or surrogate measure of the firm's power of incumbency and market. One would expect an incumbent contractor to have the highest level of sales to the agency and to enjoy a competitive advantage when bidding for a subsequent annual-order contract.

Hypothesis (H:PM1): High sales to the agency increase the probability that an incumbent contractor wins the subsequent annual-order contract.

(2) Authorized Contract Expenditure. The authorized contract expenditure is the maximum dollar-value of the annual-order contract. The bidders view the authorized expenditures as a relative measure of the value of the contract. On the other hand, CTA staff views the authorized expenditures as the amount of money that it believes is adequate to purchase the services or supplies covered by the contract. If more money is needed to meet the annual demand for service or supplies, staff is required to return to the Transit Board for authority to spend more money. Consequently, the authorized contract expenditure is not only a measure of CTA's demand and approximate price they are willing to pay for the good or service, but also the authorized expenditure is the private firm's "market price" which could stimulate intense competitive rivalry at high authorized expenditures or stimulate little to no competitive rivalry at low authorized

expenditures. Price and competition are at the core of our economic assumption regarding factors of production and profit-seeking behavior of firms.

Hypothesis (H:PM2): Larger contracts will attract more competition and be more likely to experience a change in contractors due to the price competition. Consequently, incumbent contractors will tend to lose high dollar-value contracts.

b. Low-bid position factor

The low-bid position is an economic factor used to measure whether the agency is likely to obtain goods and services at the lowest market price. This research posits that the lowest bidder offers the lowest market price which will produce low-cost goods and services for CTA. Two variables are used to measure whether the successful contractor was also the low bidder: low-bidder and percentage-low-bidder. The "low-bidder variable" is binary and the "percentage-low-bidder variable" is a continuous variable.

(1) Low-Bidder Variable. The public believes that contracts awarded to the lowest overall bidder are at the lowest market price. The low-bidder variable measures whether the successful contractor was also the one who submitted the lowest-overall bid price or whether this contractor submitted a price higher than the lowest-overall bidder but, due to the evaluation

of non-price factors, won the contract anyway. The variable is especially important because the requirement to purchase from the lowest bidder is promulgated by government procurement regulation. The regulation's mandate that the agency adheres to this policy reinforces government's faith that the lowest-overall-bidder will provide goods and services at the lowest market price.

Consequently, the lowest-overall-bidder should be successful if the CTA is trying to obtain low-cost inputs in accordance with the policy model; if the CTA prepares the procurement documents and monitors the contracting process so that price is the only uncertainty to be exposed at the bid opening and afterwards; if the repeat purchases of goods and services are also based on well written and current specifications; and if the playing field for all bidders is kept level. Given these four conditions, there should be no technical reason to by-pass the low-bidder, thereby assuming greater success to those firms who submit the lowest overall price. Finally, past sales and insider knowledge give the incumbent contractor a distinctive advantage when submitting a price for the consecutive annual-order contract. Low-bidder variable is a binary variable coded "1" to indicate that the low-overall-bidder won the contract and coded "0" to indicate other-than-low-overall-bidder won the contract.

Hypothesis (H:PM3): Incumbent firms are more likely to win a consecutive annual-order as the low-bidder because price is the only factor considered by the agency and incumbents have the advantages of past price, technical, and performance information as well as the benefits of insider knowledge.

(2) Percentage-Low-Bidder Variable. The percentage difference between the successful bidder and the next lowest bidder measures the actual percentage difference between the two bidders. The percentage difference is a core economic variable for this study and answers the question "How much lower?" as well as indicates the degree of price competition for the contract award. In a highly price competitive market, for example, we expect the percentage price difference between bidders to be minimal. On the other hand, when the market competition is minimal, we expect the percentage price difference between bidders to be maximal. Generally, we expect to find minimal percentage difference between the lowest and next lowest bidder when the procurement specifications are not restrictive and the firms are competing on a level playing field. When the price difference is great, we are suspicious that the procurement did not occur under conditions of free and open competition and favoritism may have influenced the contract award.

Hypothesis (H:PM4): Incumbent firms are more likely to win a consecutive annual-order contract under the most price

competitive conditions because they have the advantage of insider knowledge and can propose a price that is significantly lower than the price submitted by the next lowest bidder.

c. Price and CPI Change Factor

Price is at the heart of competitive equilibrium theory of supply and demand. In economics, everything has a price in the competitive profit-and-loss economic system. Price determines what gets produced, how it gets produced, and who gets the fruits of the production. Price is also used to measure competition. If the price difference is minimal among three or more firms, we assume the lowest price is near the market equilibrium price; if the price difference is great, we assume there are some monopoly elements among the firms in the markets that gives some firms a pricing advantage to make the market price less competitive.

This factor measures price change between consecutive annual-order contracts in order to determine the degree of price competition for CTA's contracts. Seven variables are used to measure price change: actual and absolute value of the price change between consecutive annual-order contracts, change in the consumer price index, actual and absolute value of the difference between the contract price change and the change in the consumer price index, and actual and absolute value of the percent

variance between consecutive contract prices and between the bid price of the successful bidder and the next lowest bidder.

(1) Contract Price Change is the difference in price between consecutive annual-order contracts, and it is measured in actual percentage difference. The difference can be positive, negative, or zero. In general, stable economic conditions are assumed to exist within an industry when the price change between contracts is at or near zero, while unstable economic conditions are assumed to exist within an industry when price change, either positive or negative, is great.

(2) Consumer Price Index (CPI) Percent Change is a general economic measure calculated from data provided by the U.S. Department of Commerce. The CPI is an independent measure of price change between consecutive annual-order contracts. This research measures the change in CPI by calculating the percent change in the CPI index between bid opening dates for two consecutive annual-order contracts. The difference can be positive, negative or zero. In general, stable economic conditions are assumed to exist within the economy when the CPI change between consecutive annual-order contracts is at or near zero, while unstable economic conditions are assumed to exist when the CPI change is great.

The principal purpose for using the CPI is to provide a basis for measuring economic change between contracting events and to use the CPI to compare changes in the general economy with price changes for the contract. Generally, we expect the contract's price change between annual-order contracts to be approximately the same as the change in the CPI. When the percent change in contract price increases faster than the CPI, we assume excess profits are being made by the firm, and we assume the proposed prices are not at the lowest overall market price. This means the CTA would not be obtaining low-cost inputs. In order to measure this difference, two additional variables are created by subtracting the difference between the change in contract price and the CPI in both actual difference and absolute values. Following is a description of both variables.

(3) Contract Price Change-CPI and the absolute value of Contract Price Change-CPI are ways to compare the price change for the contract with the general trend of price change within the economy. Chapter IV reported that the sample of annual-order contracts include commodities from several industries. These measures will allow comparison of price change within those industries with the general economy and provide a basis upon which to compare all contract prices. As previously stated, if percent change in contract prices exceeds the CPI, we consider the contract prices to be excessive, and if the price change is

less than the CPI, we consider the price to be close to the market equilibrium price and represent low-cost inputs.

(4) Contract Pricing Variance is calculated by adding together the Contract Price Change and the Percentage Low-Bidder variables. These variables provide a measure of the total pricing variance for the annual-order contract, and the variables provide an additional measure of price competition within the industry. For example, in a highly competitive industry, we expect bid prices to be relatively close together and we expect the contract price change to be minimal. Therefore, the total price variance for a highly competitive industry should be zero or a negative percent change. When the price variance is great, we expect to find an industry dominated by very few sellers or dominated by one firm. In the first case, we infer the agency is obtaining low-cost inputs, while we infer the agency is paying for excess profits in the second case.

Hypothesis (H:PM5): Incumbent firms are less successful at winning a consecutive annual-order when price change increases and indicates unstable and unpredictable pricing terms and price variance.

d. Competition factor

Counting the actual number of firms that are solicited or that respond to a bid solicitation are accurate measures of

competition. This study uses three variables to count the actual number of firms interested in doing business with the CTA, and each variable represents a different level interest on the part of the firm. Three variables represent firms who are casually interested in doing business with the CTA to firms who are ready, willing and able to do business with the CTA. The three levels of measurement are the number of firms solicited, the number of firms responding to the bid solicitation, and the number of firms submitting a bid price. All three measurements are obtained from the contract records of the particular contracting event.

(1) Number of Firms Solicited. The number of firms solicited is the most robust measure of competition, because it measures the agency's effort to publicize the particular requirement. The agency's legal responsibility is to publish an announcement in a newspaper of general circulation. This minimum requirement is based on the assumption of perfect markets where all firms capable of providing the product or service will see the advertisement. However, no government agency assumes perfect markets, and neither do firms. Firms compensate for the lack of perfect markets by contacting government agencies on a regular basis and requesting to be placed on a vendor's list for a commodity of their interest. In return, government agencies maintain those requests and notify firms when a requirement for the commodity of interest is due for renew. Vendor lists are especially effective for annual-orders because the re-

solicitation is predictable. Consequently, the number of firms solicited is an accurate, even though robust, measure of the degree to which the agency extends itself to encourage competition and the degree of competition that exists among firms in the industry.

(2) Number of Firms Responding. The number of firms responding to a bid solicitation is a more precise measure of a firm's interest in doing business with the CTA and is a more precise measure of competition among firms within the industry for the particular annual-order contract. The number of firms responding includes both firms who submit a price proposal and firms who submit a "no bid" response. This firm count represents an intermediate level of interest of firms doing business with the CTA due to the inclusion of the "no bid" responses. These "no bid" responses generally indicate that a firm wants to remain on the CTA's bid list, but for some reason, does not want to submit a competitive bid price for the particular annual-order at that time. Consequently, the number of responding firms represents the number of firms ready to do business with the CTA but not necessarily willing and able to do business.

(3) Number of Firms Submitting a Bid Price. The number of firms who submit a price proposal is the most precise measure of competition. Generally, we believe that a competitive market price is obtained when at least three firms submit a bid, and our

confidence in obtaining the best market price increases as more firms submit a bid price. This count is also an integral part of government procurement regulation which defines competition as the receipt of three or more responsive and responsible bids.

Counting the actual number of firms that are solicited, respond, or bid is not the only measure of competition. Ratios can also contribute to our understanding of competitive markets. Ratios give an accurate measure of the context within which a bidder submits a bid price. If the successful firm is the only bidder among three firms who responded, the ratio will be 0:33 and indicates low competition for the contract. On the other hand, if the firm is one of three firms who all submitted a bid price, then the ratio for the contract of bidding/responding would be 1:0 and we can infer higher competition. In order to create a ratio measurement of competition, the following three ratios are created from count of actual firms solicited, responding, and submitting a bid: (1) number of responding firms: number of solicited firms; (2) number of bidding firms: number of solicited firms; (3) number of bidding firms: number of responding firms. More competitive markets can be inferred as the ratio approaches the value of 1.0 and less competitive markets can be inferred as the ratio approaches zero.

Hypothesis (H:PM6): Incumbent contractors are less successful at winning consecutive annual-orders as competition for the contract increases.

e. Firm's pricing tactics

The fifth economic factor used to measure the likelihood that the actors are seeking efficient inputs for the public transit services is pricing tactics. The two pricing tactics of concern at this time are reflected in the contract terms. These terms are the firm's offer of a percent cash discount offered for early payment of an invoice and the firm's offer of a fixed or firm bid price for the term of the contract rather than an escalated bid price. Both pricing tactics are factors in the agency's contract decisions, and these pricing tactics can determine which firm wins the annual-order contract under some circumstances. Consequently, a firm can obtain a competitive advantage when competing for the CTA's contracts if the firm offers a cash discount for early payment of an invoice and offers a fixed price for the term of the contract rather than an escalated price. Four different measures are used to identify the influence of a firm's pricing tactics over change in contractor.

(1) Percent Discount for Early Payment. Percent discount for early payment is measured as a continuous variable, and measures the actual percent discount offered by the firm for

early payment of invoice. The percentages generally range from 0.25% up to 3.0% where 0% is used to indicate terms-of-payment of "net" or "net 30-days."

(2) Terms-of-Payment. The terms-of-payment variable is a binary variable and is coded so that "0" means that the firm has not offered a percent discount from the proposed price for early payment of the invoice, and "1" means the firm has offered a percentage discount for early payment of the invoice.

(3) Fixed-Bid-Price. The fixed-bid-price variable is a binary variable and is coded so that "1" means the bidder proposes a firm, not escalated, bid price, where the proposed price would not increase over the term of the contract, and "0" means the bidder offers an escalated bid price, where the proposed price increases during the term of the contract.

(4) Advantageous Pricing Terms. This variable measures the degree to which a successful contractor offers advantageous pricing by adding together the binary variables for terms-of-payment and the binary variable for fixed-bid-price. This composite variable is a categorical variable having the value of 0, 1, or 2. This composite variable is a surrogate measure of whether the firm is proposing a bid price at the lowest market price, and conversely, providing the agency with low-cost goods and services.

Hypothesis (H:PM7A&B): Incumbent contractors are more successful at winning the consecutive annual-order contract when they offer advantageous pricing terms and conditions or percent discount for early payment of invoices.

### 3. Self-interest model's five factors

The self-interest model's five factors are intended to measure whether politicians and bureaucrats influence the agency's contracting process for their own benefit. The five factors are location, regime, change in officeholder, control of administrative time, and contract justification.

#### a. Political value of location factor

The location factor is a core measure of distributive politics. Distributive politics theory posits that elected officials will target specialized benefits, such as, grants, jobs, and contracts to their home district in order to gain support for their next re-election bid. This research posits that CTA contracts will be used as specialized benefits by the mayor, that contracts will be targeted to firms located in wards whose alderman vote with the mayor, and that contract distribution to wards whose alderman votes with the mayor will help the mayor find support for his or her next re-election bid. Consequently, the location of the firm is considered to be of political value to firms that want to win contracts from the CTA, to aldermen who want to seek the support of the mayor for firms

located in their wards as well as obtain the support of the mayor for their re-election bids, and to the mayor who wants to obtain support for his or her next re-election bid. If these relationships are true, then the location of the firm should explain change in contractor.

Hypothesis (H:SIM1): Incumbent contractors are more likely to win consecutive annual-order contracts when they are located in wards whose alderman votes with the mayor.

(1) Political Value of Location. The political value of location in the city of Chicago is measured by ward. The address of every firm in the sample of contracts was located on a City of Chicago ward map, and values were then assigned to each ward based on how the ward's alderman voted in the city council. The highest political value was given to a ward in the city of Chicago whose alderman or constituency voted with the mayor. The lowest political value was given to the ward whose alderman or constituency voted against the mayor. While an intermediary value is given to the ward whose alderman or constituency originally voted against the mayor but then became supportive of the mayor's agenda, or vice versa. The voting records of the aldermen is based on voting studies performed by Dick Simpson and electoral results.[24]

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[24]See Appendix F for sources and decision guidelines used to establish the political value of ward location.

In addition to the firm's ward location in the City of Chicago, two other political values were given to a firm's address. Firms located outside the city of Chicago, but in the state of Illinois were given the next to lowest value, and firms located outside the state of Illinois were given the lowest overall value.

This research also accounted for change of a firm's address and the remapping of the wards. To control for a change of address, the firm's address on the particular contract is used to identify the site of the firm for that specific contracting event. If a firm moved between contract awards, the new address is used for the consecutive contract award and to identify the site of the firm for that particular contracting event. In order to adjust for the remapping of wards, the political value of a firm's site could change based on the 1980 and 1990 U.S. census data and consecutive ward remapping. The period of this study covers an approximate 10-year period from 1982 to 1992 and includes two censuses. The two principal ward maps for this period are the 1986 and 1992 ward maps. The 1986 ward map is considered the best and final ward map to represent the 1980 census. The 1992 ward map is considered the best and final ward map to represent the 1990 Census. The same ward value was used for both ward maps, and Table XI summarizes the method for assigning values to each ward.

TABLE XI: METHOD FOR ASSIGNING VALUES TO EACH WARD AND OTHER LOCATIONS

| FIRST YEAR OF MAYOR'S TERM IN OFFICE | LAST YEAR OF MAYOR'S TERM IN OFFICE | VALUE OF THE DUMMY VARIABLE CALLED "WARD" |
|---|---|---|
| WARD'S ALDERMAN VOTED IN FAVOR OF MAYOR'S POSITION | WARD'S ALDERMAN VOTES IN FAVOR OF MAYOR'S POSITION | 4 |
| WARD'S ALDERMAN VOTES AGAINST MAYOR'S POSITION | WARD'S ALDERMAN VOTES IN FAVOR OF MAYOR'S POSITION | 3 |
| WARD'S ALDERMAN VOTES IN FAVOR OF MAYOR'S POSITION | WARD'S ALDERMAN VOTES AGAINST MAYOR'S POSITION | 3 |
| WARD'S ALDERMAN VOTES AGAINST MAYOR'S POSITION | WARD'S ALDERMAN VOTES AGAINST MAYOR'S POSITION | 2 |
| SITE OF THE FIRM IS OUTSIDE OF THE CITY OF CHICAGO, BUT IN THE STATE OF ILLINOIS | | 1 |
| SITE OF THE FIRM IS OUTSIDE OF THE CITY OF CHICAGO AND OUTSIDE OF THE STATE OF ILLINOIS | | 0 |

(2) Total Political Value of Location - The previous measure of political value of the firm's location was determined as a function of each mayor. Consequently, each ward can have different values over the four mayoral terms depending on whether the alderman of the ward voted for or against the agenda of any of the mayors. However, the ward can also have an aggregate value to represent the general tendency of all the wards'

aldermen to vote for or against the mayor's agenda across all four mayoral terms. The value for this measure can be established by adding together the value for each of the four mayoral terms. Appendix F summarizes the values of each ward for each mayor for all City of Chicago wards. The last column shows the total political value of each ward and is the average of ward value for each mayoral term.

Appendix F shows that only two wards always voted with the incumbent mayor while there were no wards that always voted against the incumbent mayor during the term of the study. Even though there are few wards at these two extremes, each ward did have its favorite mayor or mayors while clearly opposing other mayors. A general political tendency of the ward can be calculated for each ward as a function of the aldermen's voting record, and the "total political value of ward" is the variable that measure this tendency. The total political value variable for City of Chicago ward ranges from 8 to 16 while firms located outside the city but in Illinois are given a median value of 6 and firms located out-of-state are given a median value of 2. Table XII summarizes the range of total political values given to the firm's location. The value of 16 is high and represents a location that consistently shows strong support for the mayor, while a value of 2 is low and represents a location that is

outside the state of Illinois and would be least likely to give any support to the incumbent mayor.

| TABLE XII: SUMMARY OF THE RANGE OF TOTAL POLITICAL VALUES GIVEN TO EACH WARD | |
|---|---|
| Value given to location | BASIS FOR ESTABLISHING VALUE |
| 16 to 6 | VALUES OF 8 TO 16 ARE GIVEN TO THE WARDS IN THE CITY OF CHICAGO BASED ON THE VOTING RECORD OF THE ALDERMAN OF THE WARD. |
| 7 to 14 | THE RANGE OF VALUES GIVEN TO LOCATIONS OUTSIDE THE CITY OF CHICAGO BUT WITHIN THE STATE OF ILLINOIS IS 4 TO 7, AND 6 WAS SELECTED AS THE MID-POINT AND GIVEN TO ALL SUCH LOCATIONS. |
| 3 to 1 | THE RANGE OF VALUES GIVEN TO LOCATIONS OUTSIDE THE STATE OF ILLINOIS IS 1 TO 3, AND 2 WAS SELECTED AS THE MID-POINT AND GIVEN TO ALL SUCH LOCATIONS. |

b. Regime: political value of era factor

This variable tests whether the agency's contracting process is influenced by the presence of political regimes. If the Self-Interest Model is operative, one would expect to find a correlation between change in contractor and change in a political regime. This research defines a political regime as the era when the chairman of the Transit Board and president of CTA are the choice of the incumbent Mayor. The purpose of defining the "political regime" is to identify a period of time during which the influence of the prevailing elected and appointed officials are most likely to exercise maximum influence

over the CTA's contracting process, i.e., most likely time when the cozy triangle would be present. Conversely, this study assumes a newly elected mayor will have little influence over the agency's contracting process when the agency's chairman and president have been appointed by the previous mayor, and this study assumes that the incumbent mayor will have a lot of influence over the agency's contracting process when the chairman and president are appointed by the incumbent mayor. Chart V on page 66 shows the political regimes naming them as eras of consensus and conflict.

Hypothesis (SIM2A&B): Incumbent contractors are more likely to lose a consecutive annual-order contract when no regime is in power, and is positively related to the rise and fall of a political regime.

The political regime of each mayor was relatively brief during the 1980's, but the mayor's preference for a chairman and president was well known and reported regularly by the local press. Two variables are used to measure the potential effect of a political regime. One variable is binary and called "presence of a political regime," and the second variable is a continuous variables and called "power of political regimes."

(1) Presence of a Political Regime is measured as a binary event and the dates on Chart V, page 66, are used to code this

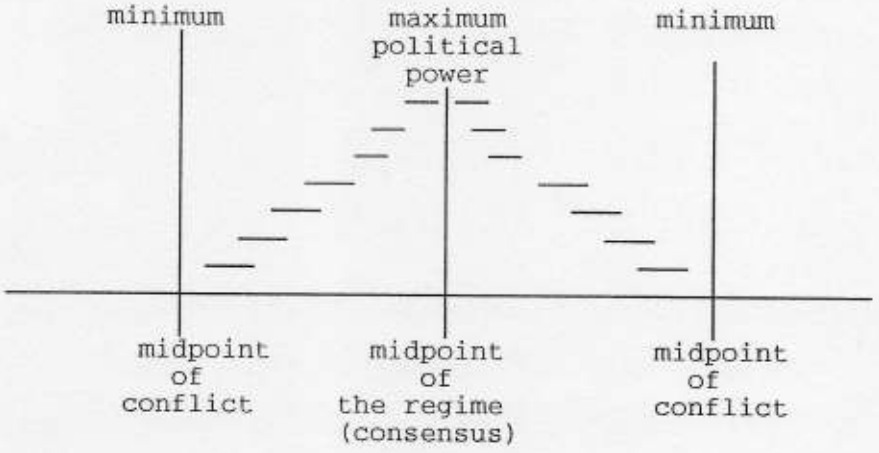
variable. The variable is coded "0" to indicate that the contract was executed during a political regime and "1" is used to indicate that the contract was executed during period when the political regime was not present.

(2) Power of the Political Regimes uses time a surrogate measure for political power. Time is used as a surrogate measure of political power based on the assumption that the longer people are in office the more likely those people are to gain and retain political power. The following assumptions provide an argument for using time to model political regimes as a continuous variable:

* Political power within the agency does not instantly shift with the changing of the mayor or any of the appointed officials.
* Political power of a regime incrementally increases or decreases as a function of time.
* There is a maximum amount of political power attained by a regime and minimum power level. Maximum power of a regime is attained at the midpoint of the regime and minimum power level is reached at the midpoint of the period of conflict.

Measurement of "power of political regimes" variable uses days prior to and after the midpoint of a political regime. Diagram III illustrates the assumption that the growth and decline of the power of a political regime approximates a normal distribution:

DIAGRAM III: NORMAL DISTRIBUTION OF POWER




c. Change in elected and appointed officeholders

The elected and appointed officeholders are a central focus of this research. In particular we want to know the relationship between the officeholders and the successful contractors. As posited in Chapter II, elected and appointed officeholders work together with private firms to form a cozy relationships, and, through consensus, the officeholders and private firms obtain individual benefits at the expense of the public good.

This research attempts to detect the existence of the posited cozy relationship among the politicians, bureaucrats and successful contractors by measuring the coincidence of their change. If this analysis finds correlation between change in the successful contractor and change of the officeholders, then we can infer that there is a cozy relationship among the public and

private actors, and the actors may enjoy the benefits of a cozy relationship. If no such correlation is found among the actors, then we will infer that no cozy relationship exists among the public and private actors.

Hypothesis (H:SIM3): Incumbent contractors are less likely to win a consecutive annual-order when the elected and appointed officeholders change.

(1) Change in Officeholder. Change in elected and appointed officeholder is measured by using a numerical value of "0" if the officeholder did not change since execution of the previous annual-order contract, and a numerical value of "1" if the officeholder changed since execution of the previous annual-order contract award. Nine variables are created to represent the changes among each of the following nine elected and appointed officeholders[25]:

1. Mayor of the city of Chicago,
2. Chairman of the Transit Board,
3. President of the CTA,
4. Vice President of Administration responsible for Purchasing,
5. Manager of the department that uses the good or service,
6. Budget Manager,
7. Manager of DBE[26] Contract Compliance,
8. Purchasing Agent, and
9. Contract Officer.

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[25]Appendix G identifies all agency actors during the research period who had influence over the agency's contracting process.

[26]DBE means Disadvantaged Business Enterprise. CTA has a policy to encourage disadvantaged business enterprises in contracting.

(2) Change in officeholder groupings. After the initial binary coding to indicate change in actor, the actors are grouped as politicians, political mediators, and bureaucrats as shown on page 52 and grouped as politicians, bureaucrats-in-purchasing, and bureaucrats-in-staff management as shown on page 54. These composite variables are used in regression models because they are categorical variables with four possible values: 0, 1, 2, 3 representing circumstances where all the actors changed between annual-order contracts to no change among the actors. Table XIII summarizes the variables used to measure change among the political actors and bureaucratic actors.

1. Politician variable measures the concurrent change in the mayor, chairman, and president.
2. Political-mediators variable measures the concurrent change in the vice president in charge of purchasing, DBE manager, and manager of the using department.
3. Agency-bureaucrats variable measures the concurrent change in the Manager of the Using department, budget manager, and contract officer.
4. Bureaucrats-in-Purchasing variable measures the concurrent change in the vice president in charge of purchasing, purchasing agent, and contract officer.

5. Bureaucrats-in-Staff-Management variable measures the concurrent change in the DBE manager, manager of the using department, and budget manager.

TABLE XIII: CHANGE OF ELECTED AND APPOINTED OFFICEHOLDERS

| BASE VARIABLES | | | | CALCULATED VARIABLES FOR OFFICEHOLDERS AS GROUPED ON PAGE 52 AND PAGE 54 | | |
|---|---|---|---|---|---|---|
| VAR. NO. | VARIABLE NAME | RANGE OF VALUE | | VAR. NO. | VARIABLE NAME | RANGE OF VALUE |
| V31 | MAYOR | 0-1 | | V40 | POLITICIANS | 0-3 |
| V14 | PRESIDENT | 0-1 | | V41 | POLITICAL MEDIATORS | 0-3 |
| V30 | CHAIRMAN | 0-1 | | V42 | BUREAUCRATS | 0-3 |
| V16 | V.P. OF ADMINISTRATION. | 0-1 | | V47 | BUREAUCRATS-IN PURCHASING | 0-3 |
| V19 | PURCHASING AGENT | 0-1 | | V48 | BUREAUCRATS-IN-STAFF | 0-3 |
| V18 | DBE MGR. | 0-1 | | | | |
| V17 | USING DEPT. MANAGER | 0-1 | | | | |
| V15 | BUDGET MANAGER. | 0-1 | | | | |
| V20 | CONTRACT OFFICER | 0-1 | | | | |

(2) Political and Bureaucratic Cohesiveness. Table XIII shows two measures of change in the elected and appointed officeholder. One measure is binary and the second measure is

categorical and created by a simple addition of the binary values for the individual actors when they are grouped together as explained on pages 52 and 54. Both measures of change will be used in this research and may provide a statistically significant explanation of change in contractor. However, neither measure gives any weight to the value of the officeholder's position. Not all political and bureaucratic offices have equal political or administrative power to influence the agency's contract decisions. For instance, change in mayor has a greater impact on the net political and administrative power of the politicians than change in chairman and president. Change in the vice president of administration has a greater impact on the net political and administrative power of the bureaucrats in purchasing than change in purchasing agent and contract officer; change in the DBE Manager has a greater impact on the net political and administrative power of the bureaucrats in staff management than change in manager of the using department and budget manager. Each of these political and administrative positions is able to influence the agency's contract decisions differently and among the actors within each grouping there is a power hierarchy. Tables XIV, XV and XVI summarize the basis for the power hierarchy within each group of officeholders.

TABLE XIV: BASIS FOR POWER HIERARCHY AMONG POLITICIANS

| RANK | ACTOR | REASON FOR POWER HIERARCHY RANKING |
|---|---|---|
| 1 | MAYOR (greatest impact) | MAYOR OF THE CITY OF CHICAGO APPOINTS THE CHAIRMAN OF THE TRANSIT BOARD |
| 2 | CHAIRMAN OF THE TRANSIT BOARD | MAYOR AND CHAIRMAN ARE KEY PEOPLE IN THE SELECTION OF THE PRESIDENT OF CTA |
| 3 | PRESIDENT OF CTA (least impact) | SELECTED BY THE MAYOR AND PRESIDENT |

TABLE XV: BASIS FOR POWER HIERARCHY AMONG BUREAUCRATS IN PURCHASING

| RANK | ACTOR | REASON FOR POWER HIERARCHY RANKING |
|---|---|---|
| 1 | V.P. OF ADMINISTRATION (greatest impact) | TOP ADMINISTRATIVE OFFICER RESPONSIBLE FOR THE AGENCY'S PURCHASING FUNCTION |
| 2 | PURCHASING AGENT | REPORTS TO THE V.P. OF ADMINISTRATION |
| 3 | CONTRACT OFFICER (least impact) | REPORTS TO PURCHASING AGENT |

TABLE XVI: BASIS FOR POWER HIERARCH AMONG BUREAUCRATS IN MANAGEMENT

| RANK | ACTOR | REASON FOR POWER HIERARCHY RANKING |
|---|---|---|
| 1 | DBE MANAGER (greatest impact) | THE DBE MANAGER MUST CERTIFY THAT THE DBE SUBCONTRACTORS DO OBTAIN 30% OF THE TOTAL CONTRACT |
| 2 | USING DEPARTMENT MANAGER | ESTABLISHED THE NEED FOR THE COMMODITY OR SERVICES, ALLOCATES BUDGET FOR PROCUREMENT |
| 3 | BUDGET MANAGER (least impact) | CONCURS THAT SUFFICIENT MONEY IS IN THE USING DEPARTMENT'S BUDGET TO COVER CONTRACT VALUE. |

Interpretation of the above tables is as follows. The chairman may have significantly less power to influence a contract decision when the mayor changes, but not lose as much power to influence when the president changes if the mayor remains the same. The purchasing agent will lose some power to influence a contract decision when the vice president of administration changes, but may not lose any power to influence when the contract officer changes. The manager of the using department may lose some power to influence a contract decision when the DBE manager changes, but not lose any power to influence when the budget manager changes. Generally, change in the first person listed in Tables XIV, XV, and XVI has the greatest impact on the particular group's power to influence an agency's contract decisions, whereas the last person listed in the above tables has the least impact on the particular group's power to influence an agency's contract decision.

Tables XVII, XVIII, and XIX assign numerical values to all possible combinations of changes in the officeholders. These tables show the degree to which the officeholders "hang together," and is hereinafter called "cohesiveness" and is measured on a scale of 1 to 8, where "8" indicates minimum cohesiveness among the officeholders, and "1" indicates maximum cohesiveness among the officeholders. Maximum cohesiveness is when none of the officeholders change between consecutive annual-

order contracts and minimum cohesiveness is when all of the officeholders change between consecutive annual-order contracts.

TABLE XVII: POLITICAL COHESIVENESS MEASURE, where 0=no change in actor and 1=change in actor

| MAYOR'S BINARY VALUE | CHAIRMAN'S BINARY VALUE | PRESIDENT'S BINARY VALUE | POLITICAL COHESIVENESS |
|---|---|---|---|
| 1 | 1 | 1 | 8 |
| 1 | 1 | 0 | 7 |
| 1 | 0 | 1 | 6 |
| 1 | 0 | 0 | 5 |
| 0 | 1 | 1 | 4 |
| 0 | 1 | 0 | 3 |
| 0 | 0 | 1 | 2 |
| 0 | 0 | 0 | 1 |

TABLE XVIII: PURCHASING COHESIVENESS MEASURE, where 0=no change in actor and 1= change in actor

| V.P. ADMINISTRATION'S BINARY VALUE | PURCHASING AGENT'S BINARY VALUE | CONTRACT OFFICER'S BINARY VALUE | PURCHASING COHESIVENESS |
|---|---|---|---|
| 1 | 1 | 1 | 8 |
| 1 | 1 | 0 | 7 |
| 1 | 0 | 1 | 6 |
| 1 | 0 | 0 | 5 |
| 0 | 1 | 1 | 4 |
| 0 | 1 | 0 | 3 |
| 0 | 0 | 1 | 2 |
| 0 | 0 | 0 | 1 |

TABLE XIX: STAFF COHESIVENESS MEASURE, where 0=no change in actor and 1=change in actor

| DBE MANAGER'S BINARY VALUE | USING DEPT. MANAGER'S BINARY VALUE | BUDGET MANAGER'S BINARY VALUE | STAFF COHESIVENESS |
|---|---|---|---|
| 1 | 1 | 1 | 8 |
| 1 | 1 | 0 | 7 |
| 1 | 0 | 1 | 6 |
| 1 | 0 | 0 | 5 |
| 0 | 1 | 1 | 4 |
| 0 | 1 | 0 | 3 |
| 0 | 0 | 1 | 2 |
| 0 | 0 | 0 | 1 |

d. Administrative review time

Time is the common denominator to business and government as well as our personal life. Time, like age, is a powerful descriptor of decisions. Both the type of decisions we face and the scope of possible solutions we consider are a function of the time we have for deliberation. This study takes no exception to the influence of time on the decisions we make in our personal life, business life, or public life.

This study posits that the politicians and bureaucrats control the amount of time they use to make contract decisions, and that the amount of time allocated to any particular contract decision is a function of any or all of the following three aspects: the decision's technical complexity, the decision's impact on the agency's operation, and the decision's impact on the constituency the agency serves which is defined as those who seek both general as well as individual benefits from the agency.

The first aspect, technical complexity, is not applicable to the annual-order contracts under study, because annual-orders include commodity-type services and products, purchased yearly and generally require little or no change to the specification. Therefore, it is highly unlikely that technical complexity will be an issue among these annual-order contracts and it is highly unlikely that technical complexity will cause any change in administrative time. It is also unlikely that the second aspect

will have any impact on administrative time. Annual-order contracts will not have any significant impact on the operation of the agency. By definition, these contracts cover goods and services that are routinely used by the agency year-after-year so their impact on the agency's operation is highly predictable. The third aspect will most likely impact the amount of administrative time used by the agency to make contract decisions; the annual-order contracts issued by the agency can have an impact on some of the agency's constituency. This study posits that the contractors are the constituency which experience the greatest impact of the agency's contract decisions. If the contractors believe they are being treated fairly by the agency's procurement process, they will not delay the agency's decisions by a formal protest or use the informal political network, if they have established such relationship.

This study posits that the agency will make a relatively quick contract decision if both the politicians and bureaucrats are confident in the recommended contractor, and if all the interested contractors believe they have been treated fairly by the agency. An example of this decision is when the incumbent contractor is also the lowest-overall-bidder and proposed the same good or service. On the other hand, the agency will take longer to make contract decisions if the administrators have some doubt regarding the recommended contractor or if any bidder protests the bid solicitation and contract recommendation because

the bidder believes the agency has mishandled the procurement process. An example of this decision is when a new firm submits the lowest price by proposing an alternate that is an "equal to" good or service and the alternate must be evaluated by the agency. Political reasons for use of administrative time are equally straightforward; this study posits that the agency's administrator will render contract decisions for political allies in less time because there is more consensus among the actors, and the agency will render contract decisions for political adversaries in more time because there is more conflict among the actors.

On the other hand, there should be no time difference among the contract decisions for annual-order contract. Administrative time should not explain the agency's contract decisions, because the annual-orders under study represent repeat purchases of routine, commodity-type goods and services where price should be the only question to be answered each year. Consequently, no correlation should be found between contract processing time and change in contractor if price is the only factor to be evaluated.

Hypothesis (H:SIM4): If a relationship is found between administrative review time and change in contractor, the incumbent contractor is least likely to win the consecutive annual-order contract when administrators increase their review

time and the challenger is least likely to win the contract when administrators make a review of the contract award decision.

This study includes a very accurate measurement of time. Time is measured in days and five phases of the agency's contract decision are clearly defined by this factor. Each phase represents a discrete action required of the officeholder and the officeholder must sign the contract recommendation to show their approval. Most importantly, each signature is dated. Consequently, the following six decision milestones can be accurately identified and measured to define five important phases of the agency's contract decisionmaking process.

(1) Date of renewal for the annual-order requirement. A new purchase requisition is initiated each year for every annual-order contract. The requisition confirms the need and budget for the good or service. The manager of the appropriate using department signs the requisition to verify the need, procurement documents are updated, and a bid opening date is established for the requirement.

(2) Bid Opening Date. The bid opening date is a public bid opening and is a legal requirement for all sealed bids over $5,000 in value. The public bid opening date is important because both the firm's bid price and number of competing firms are identified at this time.

(3) Date of the Draft of the Contract Recommendation. After receipt of bids, the contract officer reviews all bids to determine whether the bids are responsive to the agency's bid solicitation, and determines whether the firms have the capability to perform in accordance with the contract terms and conditions. When the contract officer completes his or her review, a draft of the board recommendation is prepared by the contract officer. The draft's date signifies the end of the contract officer's period of bid evaluation and review, and the draft date signifies the beginning of the formal administrative review and approval of the contract recommendation by the purchasing agent.

(4) Date the Purchasing Agent Signs the Board Recommendation. The signature date of the agency's purchasing agent begins the formal administrative review approval process and signifies acceptance of the contract officer's recommendation as submitted and/or as modified by the purchasing agent. Prior to his signature, the purchasing agent may discuss the recommendation with the contract officer, personnel in the using department, or the interested firms. In some cases, the recommendation may be delayed by the purchasing agent pending further review. After the purchasing agent's signature, the recommendation is then reviewed by three executive managers: DBE managers, manager of the using department, and the budget manager. These managers' signatures are required in order for

the contract recommendation to be presented to the president of the CTA for his review and approval.

(5) Date the President signs the contract recommendation. The President's signature ends the period of administrative review. After the president's signature, the recommendation is presented to the Transit Board for their approval.

(6) Date the chairman signs the contract. The chairman's signature formally ends the agency's contracting process under study. The Chairman's signature legally binds the agency to purchase the good or service from the specified firm for the specified period of time, usually twelve months.

As previously stated, this research posits that the administrative time is under the control of the political and bureaucratic actors. This analysis measures five time phases of the agency's contracting process, in days, between each of the six milestone dates. The primary data entered in the original database, is the actual date of occurrence of each of the six milestone approvals. The five time periods are: pre-bid and bid solicitation, bid evaluation by the contract officer, recommendation review by the purchasing agent, executive management's review of the contract recommendation, and chairman's pre-contract execution review. In addition to the five time periods, total processing time is calculated and used

as a sixth time period to measure the total contract processing time required to award an annual-order contract from the date of renewal of an annual-order to the date of the chairman signs the contract.

The number of days the agency requires to process a contract through any one of the five phases is a valid measure. However, it is not the only effective measure of each time period, because the day-count only reveals the length of time required for any one phase. We do not know whether the length of the time period represents a small or large proportion of the total contract processing time for the particular contracting event. In order to capture the relative length of each time period, a ratio is calculated for each time period. The ratio does measure the relative length any one period in comparison with the other periods.

e. Contract justification factor[28]

The remarks section of the board recommendation provides the justification for award of contract. The agency awards contracts to achieve both economic goals as well as social goals, and the agency's ability to achieve either or both goals is explained in the contract justification section. For the type of annual-order and commodity-type of purchases under study, the remarks section

[28]See Appendix H for a copy of a typical board recommendation that illustrates a long board recommendation remarks section and a short board recommendation remarks section.

of the board recommendation ought to be relatively brief. These annual-orders should use clear specifications that have been developed over years of usage, reflect standards in the industry, have reasonable contract terms and conditions, and leave price as the only item to be explained in the remarks section of the recommendation. Consequently the remarks section of the board recommendation ought to be relatively simple and brief.

Two variables are used to measure the length of the board recommendation. One measure is a binary variable and is coded to indicate whether the recommendation is simple or complex, and the second measure is a continuous variable and is an actual count of the number of lines in the recommendation. Following is an explanation of these variables.

(1) Simple or Complex Remarks. When the contract award is made to the lowest overall responsive and responsible bidder, the remarks section of the board recommendation ought to be very brief, and written in the following general form:

> "The proposed price is ___% below the next lowest bidder and _____% above the last contract price."

On the other hand, several circumstances surrounding the contracting event can cause a need for a more extensive explanation. These circumstances include the following:

* low overall bidder is not a responsive or responsible bidder,
* low overall bidder is not compliant with the social goal of including DBE firms in the bid response,
* change of specifications or usage,

* extremely high or extremely low price change between contracts,
* lack of competition.

The general inference is that low-cost inputs are more likely to be obtained when the remarks portion of the contract recommendation is brief. This variable is coded "0" to indicate simple remarks and "1" to indicate complex remarks.

(2) Number of Lines in Remarks Section. Another measure of the length of the remarks section of the board recommendation is to count the number of lines. This variable is a measure of the number of lines used for the remarks section of the board recommendation and is estimated to the fraction of an inch. The inference regarding this variable is that low-cost inputs are obtained from the lowest overall-bidder who is more likely to occur when the remarks section is shorter.

Hypothesis (H:SIM5): Incumbent contractors who are more likely to submit the lowest overall bid are more likely to lose a consecutive annual-order when the remarks section is complex or longer.

(3) DBE Policy Administration[29] is the exclusive measure of whether the agency achieves its social goals. This variable is

[29]See Appendix C for a definition of a Disadvantaged Business Enterprise (DBE) and Appendix D for the agency's DBE policy.

coded "1" when the successful firm is a DBE firm and coded "0" when the successful firm is a non-DBE firm. This variable measures the net result of the administration of the agency's DBE policy.

Hypothesis (H:SIM6): Incumbent contractors are more likely to lose a consecutive annual-order contract when agency the is successful at achieving the goals established by its DBE policy.

The next chapter summarizes all the hypotheses regarding the change in contractor, provides an univariate analysis of all the variables, and reports the empirical findings of the multivariate logit analysis.

# VI. CONTRACT DECISION MODEL: EMPIRICAL FINDINGS

This study analyzes two research hypotheses that may explain why there is a change in contractors at the agency under study. The first hypothesis tests whether the policy model, the model which indicates whether the public good is being served, is operative within the agency's procurement process. The second hypothesis tests whether the self-interest model, the model which measures whether the politicians and bureaucrats influence the contracting process for their own benefit, is operative within the agency's procurement process. The analysis will determine which model explains change in contractor or whether both models provide an equally compelling explanation for change in contractor. The analysis develops a multivariate regression model of the agency's contracting process. Logit analysis is the principal statistical method used to develop a statistical model of the agency's contracting process.

## A. Policy Model Hypotheses: Five Economic Factors

The policy model measures whether the maximum public good is being sought by the agency and, more specifically, whether the agency is seeking low-cost goods and services to provide low-cost public transit services. Consequently, it is hypothesized that five economic factors will explain the change in contractor as shown in Table XX.

TABLE XX: POLICY MODEL FACTORS - THE FIVE ECONOMIC FACTORS THAT EXPLAIN CHANGE IN CONTRACTOR

| EXPLANATORY VARIABLES: | RESPONSE VARIABLES: An increase in the explanatory variable will cause a corresponding increase (+) or decrease (-) in the probability of change in contractor. | | HYPOTHESIZED RELATIONSHIP REGARDING THE PROBABILITY THAT THE INCUMBENT WILL WIN AN ANNUAL-ORDER CONTRACT |
|---|---|---|---|
| VARIABLE NAME (Variable Number) | PROBABILITY OF THE INCUMBENT WINNING | PROBABILITY OF THE CHALLENGER WINNING | |
| 1. FINANCIAL ASPECTS FACTOR | | | |
| Annual Sales to the Agency (V7) | (+) | (-) | Incumbent's probability of winning increases as his/her sales increase (H:PM1) and decreases as the contract values increase (H:PM2). |
| Authorized Contract Expenditure (V28) | (-) | (+) | |
| 2. LOW-BID POSITION FACTOR | | | |
| Low-Bidder (V9) | (+) | (-) | Incumbent's probability of winning increases when they submit the lowest overall bid price (H:PM3). |
| Percentage-Low-Bidder (V10) | (+) | (-) | Incumbent's probability of winning increases as the margin between low and second-low bidder increases (H:PM4). |
| 3. PRICE AND CPI CHANGE FACTOR | | | |
| Contract Price Change (V24) | (-) | (+) | Incumbent's probability of winning decreases as change in contract prices, CPI, and contract price variance increase (H:PM5). |
| Absolute Value of Contract Price Change (V24A) | (-) | (+) | |
| Consumer Price Index (CPI) (V33) | (-) | (+) | |
| Contract Price Change-CPI (V34) | (-) | (+) | |
| Absolute Value of Contract Price Change-CPI (V34A) | (-) | (+) | |
| Contract Price Variance (V39) | (-) | (+) | |
| Absolute value of contract price variance (39A) | (-) | (+) | |

TABLE XX: POLICY MODEL FACTORS - THE FIVE ECONOMIC FACTORS THAT EXPLAIN CHANGE IN CONTRACTOR (continued)

| VARIABLE NAME (Variable Number) | PROBABILITY OF THE INCUMBENT WINNING | PROBABILITY OF THE CHALLENGER WINNING | HYPOTHESIZED RELATIONSHIP REGARDING THE PROBABILITY THAT THE INCUMBENT WILL WIN AN ANNUAL-ORDER CONTRACT |
|---|---|---|---|
| 4. COMPETITION FACTOR | | | |
| Number of Firms Solicited (V11) | (-) | (+) | Incumbent's probability of winning decreases as competition increases (H:PM6). |
| Number of Firms Responding (V12) | (-) | (+) | |
| Number of Firms Bidding (V13) | (-) | (+) | |
| Number of Firms Responding:Number of Firms Solicited (V36) | (-) | (+) | |
| Number of Firms Bidding:Number of Firms Solicited (V37) | (-) | (+) | |
| Number of Firms Bidding:Number of Firms Responding (V61) | (-) | (+) | |
| 5. CONTRACTOR'S PRICING TACTICS FACTOR | | | |
| Fixed-Bid-Price (V27) | (+) | (-) | Incumbent's probability of winning increases when favorable pricing terms and conditions are offered (H:PM7A). |
| Terms-of-Payment (V26) | (+) | (-) | |
| Advantageous Pricing Terms (V38) | (+) | (-) | |
| Percent Discount for Early Payment (V52) | (+) | (-) | Incumbent's probability of winning increases as the percentage discount for early payment increases (H:PM7B). |

Following is a brief description of each factor and the variables used to measure the factors.

Factor 1: Financial Aspects. The financial aspects of the contracting event, the dollar-value of the annual-order contract and the dollar-value of the firm's annual sales, are likely to

explain a change in contractor. There are two continuous variables used to measure the financial aspects factor.

(a) Annual sales to the agency during the year of contract award.

(b) Authorized contract expenditure of the annual-order contract.

Factor 2: Low-Bid Position. The lowest overall bid price is likely to explain a change in contractor. There are two variables used to measure the low-bid position.

(a) Low-bidder is a binary variable.

(b) Percentage-low-bidder is a continuous variable.

Factor 3: Price and CPI Change. The percent change between consecutive annual-order contracts and percent change in CPI is likely to explain a change in contractor. There are seven continuous variables used to measure the contract price and CPI change factor.

(a) Contract price change

(b) Absolute value of contract price change

(c) Consumer price index (CPI)

(d) Contract price change-CPI

(e) Absolute value of contract price change-CPI

(f) Contract price variance

(g) Absolute value of contract price variance

Factor 4: Competition. The competition for the agency's annual-order contracts is likely to explain a change in contractor. There are six continuous variables used to measure the competition factor.

(a) Number of firms solicited

(b) Number of firms responding

(c) Number of firms bidding

(d) Number of firms responding:number of firms solicited

(e) Number of firms bidding:number of firms solicited

(f) Number of firms bidding:number of firms responding

Factor 5: Contractor's Pricing Tactics. The change in the firm's pricing tactics is likely to explain a change in contractor. There are four variables used to measure the firm's pricing tactics.

(a) Fixed-bid-price is a binary variable.

(b) Terms-of-payment is a binary variable.

(c) Advantageous pricing terms is the combination of (a) and (b) creating a categorical variable measured on a scale of 0 to 2.

(d) Percent discount for early payment of invoice is a continuous variable.

B. Self-Interest Model Hypotheses: Five Political and Bureaucratic Factors

The self-interest model states that policy actors, e.g., politicians and bureaucrats, pursue their own self-interests rather than pursue the public's interest. In order to pursue their self-interests, policy actors seek cozy relationships with each other to achieve consensus and to avoid conflict in making policy decisions. Consequently, it is hypothesized that five political and bureaucratic factors will explain the change in contractor as shown in Table XXI.

TABLE XXI: THE SELF-INTEREST MODEL FACTORS - THE FIVE POLITICAL AND BUREAUCRATIC FACTORS THAT EXPLAIN CHANGE IN CONTRACTOR

| EXPLANATORY VARIABLES: | RESPONSE VARIABLES: An increase in the explanatory variable will cause a corresponding increase (+) or decrease (-) in the probability of change in contractor. | | HYPOTHESIZED RELATIONSHIP REGARDING THE PROBABILITY THAT THE INCUMBENT WILL WIN AN ANNUAL-ORDER CONTRACT. |
|---|---|---|---|
| VARIABLE NAME (Variable Number) | PROBABILITY OF THE INCUMBENT WINNING | PROBABILITY OF THE CHALLENGER WINNING | |
| 1. POLITICAL VALUE OF LOCATION FACTOR | | | |
| Firm's Location (1990 Census) (V5) | (+) | (-) | Incumbent's probability of winning increases when locating in a politically favored site (H:SIM1). |
| Firm's Location (1980 Census) (V64) | (+) | (-) | |
| Total Value of Location (V54) | (+) | (-) | |
| 2. REGIME: POLITICAL VALUE OF ERA FACTOR | | | |
| Presence of a Political Regime (V6) | (-) | (+) | Incumbent's probability of winning decreases when no political regime controls (H:SIM2A) and is positively related to change in the regime's power (H:SIM2B). |
| Power of the Political Regime (V58) | (+) | (-) | |
| 3. CHANGE OF ELECTED AND APPOINTED OFFICEHOLDERS FACTOR | | | |
| Political Actors (V40) | (-) | (+) | Incumbent's probability of winning decreases as change among elected and appointed officials increases (H:SIM3). |
| Political Mediators (V41) | (-) | (+) | |
| Agency Bureaucrats (V42) | (-) | (+) | |
| Bureaucrats in Purchasing (V47) | (-) | (+) | |
| Bureaucrats: Staff Management (V48) | (-) | (+) | |
| Political Cohesiveness (V56) | (-) | (+) | |
| Purchasing Cohesiveness (V57) | (-) | (+) | |
| Staff Cohesiveness (V63) | (-) | (+) | |

TABLE XXII: THE SELF-INTEREST MODEL FACTORS - THE FIVE POLITICAL AND BUREAUCRATIC FACTORS THAT EXPLAIN CHANGE IN CONTRACTOR (continued)

| VARIABLE NAME (Variable Number) | PROBABILITY OF THE INCUMBENT WINNING | PROBABILITY OF THE CHALLENGER WINNING | HYPOTHESIZED RELATIONSHIP REGARDING THE PROBABILITY THAT THE INCUMBENT WILL WIN AN ANNUAL-ORDER CONTRACT. |
|---|---|---|---|
| 4. ADMINISTRATIVE REVIEW TIME FACTOR | | | |
| Pre-Bid and Bid Solicitation (TDAYS1) | (-) | (+) | Incumbent's probability of winning decreases as officials increase their review time (H:SIM4). |
| Bid Evaluation by Contract Officer (TDAYS2) | (-) | (+) | |
| Contract Recommendation Review by Purchasing Agent (TDAYS3) | (-) | (+) | |
| Contract Recommendation Review by executive staff (TDAYS4) | (-) | (+) | |
| Contract Execution (TDAYS5) | (-) | (+) | |
| Total Days Required for Contract Processing (TIME10) | (-) | (+) | |
| Pre-Bid and Bid Solicitation:Total Contract Processing Time (TR1) | (-) | (+) | |
| Bid Evaluation:Total Contract Processing Time (TR2) | (-) | (+) | |
| Purchasing Agent Review:Total Contract Processing Time (TR3) | (-) | (+) | |
| Executive Approval:Total Contract Processing Time (TR4) | (-) | (+) | |
| Contract Execution:Total Contract Processing Time (TR5) | (-) | (+) | |
| 5. CONTRACT JUSTIFICATION FACTOR | | | |
| DBE Policy Administration (V65) | (-) | (+) | Incumbent's probability of winning decreases as the success of the DBE policy administration increases (H:SIM6). |
| Simplex or Complex Remarks (V25) | (-) | (+) | Incumbent's probability of winning decreases as the agency increases the depth or complexity of their review (H:SIM5). |
| Number of Lines in Remarks Section (V53) | (-) | (+) | |

Following is a brief description of each factor and the variables used to measure the factors.

Factor 1: Political Value of Location. The location of the firm and whether or not it is located in a politically favored ward in the city of Chicago is likely to explain a change in contractor. Three variables are used to measure this factor.

(a) Location of the firm based on the 1980 and 1990 U.S. census is a categorical variable measured on a scale of 0 to 4 and adjusted to a scale of 1 to 5 for analysis.

(b) Total political value of location is a categorical variable measured on a scale of 1 to 16.

Factor 2: Regime: Political Value of Era. The change in the dominant political regime is likely to explain a change in contractor. There are two variables used to measure the era factor.

(a) Presence of a political regime is a binary variable.

(b) Power of the political regime is a continuous variable.

Factor 3: Change of Elected and Appointed Officeholders. The change in elected and appointed officeholders is likely to explain a change in contractor. There are 17 variables used to measure this factor.

(a) Five officeholder variables[30]: political actors, political mediators, agency-bureaucrats, bureaucrats in purchasing, bureaucrats: staff management. These variables are all categorical variables and measured on a scale of 0 to 3.

(b) Three political and bureaucratic cohesiveness variables: political cohesiveness, purchasing cohesiveness, and staff cohesiveness. These variables are all categorical variables and measured on a scale of 1 to 8.

Factor 4: Administrative Review Time. The change in the amount of administrative time spent by officeholders to make a contract decision is likely to explain a change in contractor. There are 11 continuous variables used to measure administrative review time.

(a) Pre-bid and bid solicitation time.

(b) Bid evaluation time by the contract officer.

(c) Review time by the purchasing agent.

(d) Contract recommendation review time by the agency's executive staff.

(e) Contract execution time.

(f) Total contract processing time.

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[30]The five officeholder variables are created from the original entry of a binary dummy variable for nine political and administrative officeholders: mayor, chairman, president, vice president of administration, purchasing agent, contract officer, DBE manager, manager of the using department, and budget manager. "0" indicates no change in officeholder between annual-order contracts and "1" indicates change in officeholder between annual-order contracts.

(g) Pre-bid and bid solicitation time: total days for contract processing.

(h) Bid evaluation time: total days for contract processing.

(i) Review time by purchasing agent: total days for contract processing.

(j) Executive staff approval of contract recommendation time: total days for contract processing.

(k) Contract execution time: total days for contract processing.

Factor 5 - Contract Justification. The length of the contract recommendation remarks and the success of implementing the DBE policy are likely to explain a change in contractor. There are three variables used to measure this factor.

(a) DBE policy administration is a binary variable.

(b) Simple or complex remarks is a binary variable.

(c) Number of lines in remarks section is a continuous variable.

## C. Statistical Testing: Logit Analysis

Logit analysis is the statistical method that calculates a linear regression relationship between a binary response variable and categorical and continuous explanatory variables. Logit analysis is used to test a linear multivariate regression model

of the agency's contract decision-making process, and the coefficients for the explanatory variables show their relative contribution to explaining the probability of change in contractor. The multivariate regression model developed in this chapter predicts the probability of change in contractor by taking into account the joint linear influences of all the significant and non-significant variables to determine the most likely threshold[30] at which the change in contractor will occur.

Logit analysis allows us to establish four basic statistical relationships: (a) the factors that will most likely cause a change in contractor, (b) the direction of that cause, (c) the factors' joint contribution to the probability of change in contractor, and (d) predictions from a set of observations.

The actual probability of change in contractor is calculated by using the coefficients to determine the circumstances under which the incumbent will win a consecutive annual-order contract and the conditions under which the challengers will win an annual-order contract. Two scenarios are developed with the model: Scenario A will identify the circumstances under which the incumbent contractor is most likely to win the subsequent annual-order contract, and this outcome is recorded as no change in contractor. Scenario B will identify the circumstances under

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[30]For an example of the threshold theory, see Neter, p.583.

which the challenger is most likely to win the annual-order contract, and this outcome is recorded as change in contractor.

Logit analysis is an appropriate approach for the analysis of the agency's contract decisions, because the decision by the agency's bureaucrats to select the best supplier is made within the context of political, economic, and administrative factors. A univariate or bivariate approach is not able to statistically analyze these multifaceted contract decisions. On the other hand, a multivariate approach is best because no public policy decision, such as contract awards, is isolated from other political, economic, or administrative factors. Consequently, a multivariate analysis, rather than univariate or bivariate analysis, is optimal for analyzing the agency's contract decisions, and the logit regression model[31] provides us with the proper statistical tool.

## D. Empirical Findings

This section provides a univariate description of all variables, a statistical and intuitive multicollinearity analysis of all variables in order to reduce multicollinearity, and a report of the empirical findings of the logit analysis. The subsequent section uses the logit regression model to develop Scenario A, incumbent wins, and Scenario B, challenger wins.

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[31]"The General Research Model" as shown on page 101 is a logit regression model because logit analysis is used to develop a statistically significant multivariate "General Research Model."

1. Univariate description

a. Response variable

The response variable is change in contractor. The incumbent wins a subsequent annual-order when the contractor does not change, and the challenger wins the annual-order when there is a change in contractor. The sample includes an even distribution of each possible change in contractor. The incumbent wins 48% of the contracting events and the challenger wins the remaining 52% of the contracting events.

The distribution of contracts between incumbent and challenger is also evenly distributed regardless of change in actors. Table XXII summarizes percentage of incumbents and percentage of challengers winning when the actors change and when they remain the same. A chi-square analysis of the relationship between change in actors and change in contractors supports the null hypothesis that change of all nine actors is independent of change in contractor.

TABLE XXII: CHANGE IN CONTRACTORS VIS-A-VIS CHANGE IN ACTORS

| AGENCY ACTOR | NEW OR SAME | INCUMBENT WINS | CHALLENGER WINS | TOTAL PERCENT | CHI-SQUARE STATISTICS (p-value) |
|---|---|---|---|---|---|
| MAYOR | same | 28% | 21% | 49% | 0.077 (.782) |
| | new | 29% | 22% | 51% | |
| CHAIRMAN | same | 30% | 19% | 49% | 0.237 (.626) |
| | new | 31% | 20% | 51% | |
| PRESIDENT | same | 16% | 32% | 48% | 0.765 (.382) |
| | new | 16% | 36% | 52% | |
| V.P. OF ADMINISTRATION | same | 24% | 24% | 48% | 1.963 (.161) |
| | new | 24% | 28% | 52% | |
| PURCHASING AGENT | same | 19% | 30% | 49% | 2.292 (.130) |
| | new | 17% | 34% | 51% | |
| CONTRACT OFFICER | same | 27% | 22% | 49% | 1.303 (.254) |
| | new | 27% | 24% | 51% | |
| DBE MANAGER | same | 33% | 16% | 49% | 1.215 (.270) |
| | new | 32% | 19% | 51% | |
| USING DEPARTMENT MANAGER | same | 29% | 20% | 49% | 2.845 (.092) |
| | new | 27% | 24% | 51% | |
| BUDGET MANAGER | same | 41% | 7% | 48% | 0.534 (.465) |
| | new | 42% | 10% | 52% | |

Geographically, incumbents and challengers are well dispersed among the city of Chicago, state of Illinois, and out of state. Table XXIII shows that approximately 40% of the firms

are located in the city of Chicago, 35% are located outside of the city but within the state, and 25% are located out of state. Appendix I shows the distribution of incumbents and challengers among the 50 wards in the city of Chicago.

DBE firms are similarly dispersed geographically as shown in Appendix I. However, DBE firms are more likely to be located in the city of Chicago: 54% are located in the city of Chicago, 41% are located outside the city but within the state, and 5% are located out of state.

TABLE XXIII: NUMBER OF FIRMS DISTRIBUTED BY LOCATION

| | INCUMBENT | CHALLENGER | TOTAL NUMBER | TOTAL NUMBER |
|---|---|---|---|---|
| IN CHICAGO | 161 | 152 | 313 | 40.4% |
| IN ILLINOIS | 108 | 164 | 272 | 35.1% |
| OUT OF STATE | 106 | 84 | 190 | 24.5% |
| TOTAL | 375 | 400 | 775 | 100% |

See Appendix I for the distribution of firms by ward in the city of Chicago.

b. Explanatory variables

Twenty-one variables are used to measure the five policy model factors, and 27 variables are used to measure the five self-interest model factors. Tables XXIV, XXV, and XXVI present

the univariate description of all variables grouped according to the factor the variable measures. Binary and continuous variables are included in the same table for policy and self-interest models; however Table XXVI describes the categorical variables with 5 or more values used to measure the self-interest model.

TABLE XXIV: POLICY MODEL FACTORS: UNIVARIATE ANALYSIS OF BINARY AND CONTINUOUS VARIABLES

| VARIABLE NAME | VAR. NO. | NO. OF EVENTS | MEAN | STD. DEV. | MIN. VALUE | MAX. VALUE |
|---|---|---|---|---|---|---|
| FINANCIAL ASPECTS FACTOR | | | | | | |
| Annual Sales to the Agency | V7 | 788 | $258[1] | $399[1] | $0 | $999[1] |
| Authorized Contract Expenditure | V28 | 795 | $104[1] | $154[1] | $3[1] | $999[1] |
| LOW-BID FACTOR | | | | | | |
| Low or Other-Than-Low Bidder | V9* | 786 | 0.80 | 0.4 | 0=OTHER-THAN-LOW BIDDER | 1=LOW-BIDDER |
| Percent-Low-Bid | V10 | 697 | 11.6% | 14.6% | 0% | 99% |
| PRICE AND CPI CHANGE FACTORS | | | | | | |
| Contract Price Change | V24 | 760 | 0.14% | 14.4% | -92.0% | 99.0% |
| Absolute Value of Percent Price Change Between Annual Order Prices | V24A | 760 | 8.8% | 11.3% | 0.0% | 99.0% |
| Consumer Price Index | V33 | 793 | 4.7% | 2.9% | 0.0% | 16.3% |
| Contract Price Change-CPI | V34 | 757 | -4.6% | 14.4% | -100.5% | 93.8% |
| Absolute Value of Contract Price Change-CPI | V34A | 757 | 9.8% | 11.5% | 0.0% | 100.5% |
| Contract Price Variance | V39 | 668 | 11.3% | 19.3% | -65.0% | 114.0% |
| Absolute Value of Contract Price Variance | V39A | 668 | 14.3% | 17.2% | 0.0% | 114.0% |
| COMPETITION FACTOR | | | | | | |
| Number of Firms Solicited | V11 | 794 | 13.3 | 5.1 | 1 | 42 |

TABLE XXIV: POLICY MODEL FACTORS: UNIVARIATE ANALYSIS OF BINARY AND CONTINUOUS VARIABLES (continued)

| VARIABLE NAME | VAR. NO. | NO. OF EVENTS | MEAN | STD. DEV. | MIN. VALUE | MAX. VALUE |
|---|---|---|---|---|---|---|
| Number of Firms Responding | V12 | 793 | 5.4 | 2.6 | 0 | 18 |
| Number of Firms Bidding | V13 | 789 | 4.2 | 2.3 | 0 | 14 |
| Number of Firms Responding:Number of Firms Solicited | V36 | 791 | .44 | .20 | 0.0 | 1.0 |
| Number of Firms Bidding:Number of Firms Solicited | V37 | 787 | .35 | .24 | 0.0 | 1.0 |
| Number of Firms Bidding:Number of Firms Responding | V61 | 787 | .80 | .22 | 0 | 1.0 |
| CONTRACTOR'S PRICING TACTICS FACTOR | | | | | | |
| Firm or Escalated Price | V27* | 794 | 0.9 | 0.3 | 0=ESCALATED PRICE | 1=FIRM PRICE |
| Discount offered for early payment | V26* | 795 | 0.58 | 0.49 | 0=no discount offered | 1=discount offered |
| Advantageous Pricing Terms ** | V38 | 794 | 0.49 | 0.57 | 0=did not offer firm price and discount | 2=offered firm price or discount |
| % Discount for Early Payment | V52 | 795 | 1.3% | 2.3% | 0.0% | 30.0% |

[1] Dollars in $1,000's; * binary variable; ** categorical variable 0, 1, or 2.

TABLE XXV: SELF-INTEREST MODEL FACTORS: UNIVARIATE ANALYSIS OF BINARY AND CONTINUOUS VARIABLES

| VARIABLE NAME | VAR. NO. | NO.OF EVENTS | MEAN | STD. DEV. | MIN. VALUE | MAX. VALUE |
|---|---|---|---|---|---|---|
| REGIME: POLITICAL VALUE OF ERA FACTOR | | | | | | |
| Presence of a Political Regime | V6 | 795 | 0.40 | 0.50 | 0=PRESENCE OF REGIME | 1=NO REGIME |
| Power of the Political Regime | V58 | 778 | 0.48 | 0.28 | .001 | .998 |
| POLITICAL VALUE OF LOCATION FACTOR (categorical variable scaled 2 to 16) | | | | | | |
| 1992 Total Political Value of Ward | V5 | 792 | 7.93 | 4.73 | 2 | 16 |
| CHANGE OF ELECTED AND APPOINTED OFFICEHOLDERS FACTOR[32] | | | | | | |
| Mayor | V31* | 794 | 0.42 | 0.49 | 0=NO CHANGE | 1= CHANGE |
| Chairman | V30* | 794 | 0.39 | 0.49 | 0=NO CHANGE | 1=CHANGE |
| President | V14* | 785 | | | 0=NO CHANGE | 1=CHANGE |
| Vice President | V16* | 788 | 0.52 | 0.50 | 0=NO CHANGE | 1=CHANGE |
| Purchasing Agent | V19* | 789 | 0.64 | 0.48 | 0=NO CHANGE | 1=CHANGE |
| Contract Officer | V20* | 786 | 0.46 | 0.50 | 0=NO CHANGE | 1=CHANGE |
| DBE Manager | V18* | 790 | 0.35 | 0.48 | 0=NO CHANGE | 1=CHANGE |
| Using Dept. Mgr. | V17* | 788 | 0.44 | 0.50 | 0=NO CHANGE | 1=CHANGE |
| Budget Manager | V15* | 788 | 0.17 | 0.37 | 0=NO CHANGE | 1=CHANGE |
| ADMINISTRATIVE REVIEW TIME FACTOR | | | | | | |
| Days Required for Pre-bid and Bid Solicitation | TDAYS1 | 781 | 150.82 | 126.14 | 3 days | 1,198 days |
| Days Required for Bid Evaluation | TDAYS2 | 766 | 59.73 | 100.26 | 2 days | 1,269 days |
| Days Required for Review by Purchasing Agent | TDAYS3 | 775 | 22.59 | 82.14 | 0 days | 1,096 days |

[32] These are the binary indicator variables used to create the five officeholder variables and the three political and bureaucratic cohesiveness variables.

TABLE XXV: SELF-INTEREST MODEL FACTORS: UNIVARIATE ANALYSIS OF BINARY AND CONTINUOUS VARIABLES (continued)

| VARIABLE NAME | VAR. NO. | NO. OF EVENTS | MEAN | STD. DEV. | MIN. VALUE | MAX. VALUE |
|---|---|---|---|---|---|---|
| Days Required for Approval of Contract Recommendation | TDAYS4 | 765 | 22.15 | 96.11 | 0 days | 2,203 days |
| Days Required for Contract Processing | TDAYS5 | 753 | 51.92 | 176.85 | 0 days | 3,643 days |
| Total Days Required for Contract Processing | TIME10 | 769 | 243.1 | 181.2 | 12 days | 3,395 days |
| Pre-bid Evaluation:Total Contract Processing Time | TR1 | 730 | 0.55 | 0.18 | 0.003 | 0.954 |
| Bid Evaluation:Total Contract Processing Time | TR2 | 730 | 0.18 | 0.13 | 0.0006 | 0.748 |
| Purchasing Agent Review:Total Contract Processing time | TR3 | 730 | 0.05 | 0.09 | 0.005 | 0.467 |
| Executive Approval:Total Contract Processing Time | TR4 | 730 | 0.07 | 0.07 | 0.024 | 0.491 |
| Contract Execution:Total Contract Processing time | TR5 | 730 | 0.15 | 0.11 | 0.000 | 0.936 |
| CONTRACT JUSTIFICATION FACTOR | | | | | | |
| DBE Policy Administration | V65* | 800 | 0.18 | 0.39 | 0=Non-DBE firm | 1=DBE firm |
| Simple or Complex Remarks | V25* | 784 | 0.58 | 0.49 | 0=Complex | 1=Simple |
| Number of Lines in Remarks Section | V53 | 786 | 41.98 | 41.08 | 0 | 275 |

* binary variable.

TABLE XXVI: SELF-INTEREST MODEL: UNIVARIATE ANALYSIS OF CATEGORICAL VARIABLES

| VARIABLE NAME | VAR.NO. | NO. OF EVENTS | MEAN | STD. DEV. | COUNT IN EACH CATEGORY | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| POLITICAL VALUE OF LOCATION FACTOR | | | | | | | | | | | | |
| 1992 Ward Value | V5 | 790 | 2.7 | 1.5 | 194 | 285 | 67 | 52 | 191 | * | * | * |
| 1986 Ward Value | V64 | 787 | 2.6 | 1.48 | 195 | 290 | 76 | 50 | 176 | * | * | * |
| CHANGE OF ELECTED AND APPOINTED OFFICEHOLDERS FACTOR | | | | | | | | | | | | |
| Political Actors | V40 | 771 | 2.50 | 0.96 | 120 | 289 | 221 | 141 | * | * | * | * |
| Political Intermediaries | V41 | 788 | 2.51 | 1.02 | 175 | 166 | 314 | 133 | * | * | * | * |
| Bureaucrats | V42 | 779 | 2.06 | 0.88 | 237 | 298 | 201 | 43 | * | * | * | * |
| Bureaucrats in Purchasing | V47 | 779 | 2.62 | 1.02 | 146 | 147 | 289 | 170 | * | * | * | * |
| Bureaucrat-in-Staff | V48 | 788 | 1.96 | 1.07 | 375 | 166 | 152 | 95 | * | * | * | * |
| Political Cohesiveness | V56 | 779 | 4.83 | 2.50 | 146 | 28 | 70 | 127 | 76 | 33 | 129 | 170 |
| Purchasing Cohesiveness | V57 | 771 | 4.15 | 2.54 | 120 | 211 | 19 | 98 | 59 | 77 | 46 | 141 |
| Staff Cohesiveness | V63 | 788 | 3.19 | 2.62 | 375 | 105 | 8 | 22 | 53 | 122 | 8 | 95 |

* Categories that are marked with an asterisk indicate values that were not collected for the variable.

## 2. Statistical and intuitive multicollinearity analysis

The assumption of independence among explanatory variables is tested in this section. Multicollinearity[33] refers to linear correlation among explanatory variables. Multicollinearity causes two problems in multivariate regression analysis.

> First, it limits the size of the coefficient of determination and makes it increasingly more difficult to add unique explanatory predictions from additional variables. Second, and just as importantly, it makes determining the contribution of each independent variable difficult because the effects of the independent variables are 'mixed' or confounded due to collinearity. Thus the regression coefficients may be incorrectly estimated and have the wrong sign. (Hair, p.47).

Multicollinearity also causes a special problem in logistic regression.

> Convergence difficulties in the iterative numerical search procedure for finding maximum likelihood estimates of the multiple logistic regression function may be encountered when independent variables are highly correlated;... (Neter p. 601).

The research design includes two or more variables used to measure each policy model factor and each self-interest model factor. The variables were selected prior to data collection, and it was not known whether the variables represented redundant or complementary measures of the factor. This section uses Pearson correlation analysis and intuitive reasoning, in some instances, to identify redundant measures or variables that are linearly correlated and cause multicollinearity.

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[33]The explanation of multicollinearity is based on Multivariate Data Analysis by Hair, Anderson, Tatham and Black, Macmilliam Publishing Co., 1984.

Table XXVII presents the variables that will be used to measure the influence of the policy model and self-interest model on the agency's contract decisions. Table XXVII footnotes identify the Pearson correlation coefficient of variables with high linear correlation, 0.80 Pearson coefficient or higher. One of the two highly correlated variables is eliminated from the multivariate model. Table XXVII footnotes also identify Appendix J and Appendix I as sections which contain the statistical and intuitive arguments for using only the cohesiveness variables to measure change in actors and for using only the actual days to measure administrative time.

| TABLE XXVII: VARIABLE SELECTION FOR THE POLICY AND SELF-INTEREST MODELS BY REDUCING MULTICOLLINEARITY | | |
|---|---|---|
| POLICY MODEL: PRINCIPAL MEASURES (Variable Name and Number) | | SELF-INTEREST MODEL: PRINCIPAL MEASURES (Variable Name and Number) |
| FINANCIAL ASPECTS FACTOR | | POLITICAL VALUE OF LOCATION FACTOR |
| Annual Sales to the Agency (V7) | | Firm's Location Based on the 1990 Census (V5)[34] |
| Authorized Contract Expenditure (V28) | | |
| LOW-BID POSITION FACTOR | | REGIME FACTOR |
| Low-Bidder and Other-Than-Low (V9) | | Presence of a Political Regime (V6) |
| Percentage Low-Bid (V10) | | Power of a Political Regime (V58) |
| PRICE AND CPI CHANGE FACTOR | | CHANGE OF ELECTED AND APPOINTED OFFICEHOLDER FACTOR[35] |
| Contract Price Change (V24)[36] | | Political Cohesiveness (V56) |
| Absolute Value of Contractor Price Change (V24A)[37] | | Purchasing Cohesiveness (V57) |
| Consumer Price Index (V33)[38] | | Staff Cohesiveness (V63) |
| COMPETITION FACTOR | | ADMINISTRATIVE REVIEW TIME[39] |
| Number of Firms Solicited (V11) | | Days for Pre-Bid and Bid Solicitation (TDAYS1) |

[34]Highly correlated with V54 and V64 where coefficients are .92818 and .93677, respectively.

[35]See Appendix J for the explanation for using cohesiveness measures as the principal measure for change of actors.

[36]Highly correlated with V34, coeff.=.9805.

[37]Highly correlated with V334A, coeff.=.9094.

[38]Highly correlated with V26, coeff.=.8648.

[39]See Appendix K for an explanation for using the measure of administrative time in days rather than ratio.

| TABLE XXVII: VARIABLE SELECTION FOR THE POLICY AND SELF-INTEREST MODELS BY REDUCING MULTICOLLINEARITY (continued) | | |
|---|---|---|
| POLICY MODEL: PRINCIPAL MEASURES (Variable Name and Number) | | SELF-INTEREST MODEL: PRINCIPAL MEASURES (Variable Name and Number) |
| Number of Firms Bidding (V13)[40] | | Days for Contract Officer's Review (TDAYS2) |
| Firms Responding:Firms Bidding (V61) | | Days for Purchasing Agent's Review (TDAYS3) |
| | | |
| | | |
| | | Days for Executive Staff & President's Review (TDAYS4) |
| | | Days for Contract Execution (TDAYS5) |
| FIRM'S PRICING TACTICS FACTOR | | CONTRACT JUSTIFICATION |
| Firm Price vs. Escalated Price (V27) | | DBE Policy Administration (V65) |
| Advantageous Pricing Terms (V38) | | Remarks: Simple or Complex (V25) |
| % Discount for Early Payment (V52) | | No. of Lines for Recommendation (V53) |

### 3. Logit analysis

The Logit analysis is performed in two steps: The policy and self-interest models are tested independently and then tested jointly. The two-step approach provides insights regarding the impact of each model in isolation from the other model. Column 3 and column 4 in Table XXVIII report each model's effect on change in contractor when tested independently, and column 5 reports the models effect on change in contractor when tested jointly.

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[40]Highly correlated with V13, coeff.=.8817.

TABLE XXVIII: SUMMARY OF THE LOGIT ANALYSIS FOR THE POLICY AND SELF-INTEREST MODELS AND THE JOINT EFFECT OF BOTH MODELS

| FACTORS | VARIABLE NAME (Variable Number) | POLICY MODEL ONLY | | SELF-INTEREST MODEL ONLY | | POLICY AND SELF-INTEREST MODELS | |
|---|---|---|---|---|---|---|---|
| | | COEFF. | P-VALUE | COEFF. | P-VALUE | COEFF. | P-VALUE |
| COLUMN 1 | COLUMN 2 | COLUMN 3 | | COLUMN 4 | | COLUMN 5 | |
| FINANCIAL ASPECTS FACTOR | ANNUAL SALES TO THE AGENCY (V7) | .00074 | .0096 | | | .00071 | .0308 |
| | AUTHORIZED EXPENDITURE (V28) | .00154 | .0113 | | | .00128 | .0532 |
| LOW-BID POSITION FACTOR | LOW-BIDDER (V9) | .7904 | .0015 | | | .4326 | .1509 |
| | PERCENT LOW-BID (V10) | .0408 | .0001 | | | .0395 | .0001 |
| PRICE AND CPI CHANGE FACTOR | PERCENT PRICE CHANGE (V24) | .0431 | .0001 | | | .0474 | .0001 |
| | ABSOLUTE VALUE OF PRICE CHANGE (V24A) | -.0695 | .0001 | | | -.0743 | .0001 |
| | CONSUMER PRICE INDEX (V33) | -.0062 | .0692 | | | -.00393 | .4101 |
| COMPETITION FACTOR | FIRMS SOLICITED (V11) | -.0526 | .0146 | | | -.0536 | .0264 |
| | FIRMS BIDDING (V13) | -.1846 | .0007 | | | -.1698 | .0055 |
| | BIDDING/RESPONDING (V61) | .6222 | .1978 | | | .6466 | .2252 |
| CONTRACTOR'S PRICING TACTICS FACTOR | FIRM PRICE (V27) | .8806 | .0215 | | | .9572 | .0285 |
| | ADVANTAGEOUS PRICING TERMS (V30) | -.2748 | .1882 | | | -.3227 | .1648 |
| | PERCENT DISCOUNT FOR EARLY PAYMENT (V52) | .00080 | .8389 | | | .00219 | .6176 |
| SELF-INTEREST MODEL | | | | | | | |
| POLITICAL VALUE OF LOCATION FACTOR | FIRM'S LOCATION BASED ON THE 1990 CENSUS (V5) | | | .0972 | .0752 | .0670 | .3528 |
| REGIME FACTOR | PRESENCE OF A POLITICAL REGIME (V6) | | | -.0688 | .7246 | -.1330 | .5943 |
| | POWER OF A POLITICAL REGIME (V58) | | | -.3149 | .3596 | .0966 | .8247 |
| CHANGE OF ELECTED AND APPOINTED OFFICIALS | POLITICAL COHESIVENESS (V56) | | | -.0099 | .7764 | -.0274 | .5666 |
| | PURCHASING COHESIVENESS (V57) | | | .0133 | .7133 | .00765 | .8729 |
| | MANAGEMENT STAFF COHESIVENESS (V63) | | | -.0097 | .8038 | -.0049 | .9198 |
| ADMINISTRATIVE REVIEW TIME FACTOR (measured in days) | DAYS FOR PRE-BID AND BID SOLICITATION (TDAYS1) | | | -.0017 | .0166 | -.0020 | .0327 |
| | DAYS FOR CONTRACT OFFICER REVIEW (TDAYS2) | | | .00044 | .6493 | -.0001 | .9269 |
| | DAYS FOR PURCHASING AGENT'S REVIEW (TDAYS3) | | | -.0053 | .0129 | -.0037 | .1766 |
| | DAYS FOR EXECUTIVE STAFF AND PRESIDENT'S REVIEW (TDAYS4) | | | .00585 | .0196 | .00475 | .1529 |
| | DAYS FOR CONTRACT EXECUTION (TDAYS5) | | | -.0003 | .5790 | -.0002 | .7705 |
| CONTRACT JUSTIFICATION FACTOR | DRE POLICY ADMINISTRATION (V65) | | | -1.451 | .0001* | -1.157 | .0001 |
| | REMARKS: SIMPLE OR COMPLEX (V25) | | | -.2259 | .3017 | -.1996 | .4865 |
| | CONTRACT JUSTIFICATION (V53) | | | -.0026 | .2888 | -.0017 | .6286 |
| | | | | | | | |
| $R^2$ | GENERALIZED COEFFICIENT OF DETERMINATION | 0.2941 | | 0.1215 | | 0.3531 | |

a. Hypothesis testing

Tables XXIX and XXX report the results of testing the policy model and self-interest model hypotheses as stated in Table XX and Table XXI. Ten policy model hypotheses and five self-interest model hypotheses are accepted at the 0.01, 0.05, and 0.10 level of significance. The results as reported in the tables are based on testing the models independent of each other. Variables that were eliminated from the multivariate regression to reduce multicollinearity are not shown in the following two tables.

TABLE XXIX: HYPOTHESIS REGARDING EACH VARIABLE USED TO MEASURE THE INFLUENCE OF THE POLICY MODEL.

| EXPLANATORY VARIABLES: | RESPONSE VARIABLE: An increase in the explanatory variable will cause a corresponding increase (+) or decrease (-) in the probability of change in contractor. | | HYPOTHESIZED RELATIONSHIP |
|---|---|---|---|
| VARIABLE NAME (Variable Number) | PROBABILITY OF THE INCUMBENT WINNING | PROBABILITY OF THE CHALLENGER WINNING | ACCEPT OR NOT SIGNIFICANT |
| FINANCIAL ASPECTS FACTOR (H:PM1 and H:PM2) | | | |
| Annual Sales to the Agency (V7) | (+) | (-) | ACCEPT*** (H:PM1) |
| Authorized Contract Expenditure (V28) | (-) | (+) | ACCEPT[1]*** (H:PM2) |
| LOW-BID POSITION FACTOR (H:PM3 and H:PM4) | | | |
| Low-Bidder (V9) | (+) | (-) | ACCEPT*** (H:PM3) |
| Percentage-Low-Bidder (V10) | (+) | (-) | ACCEPT*** (H:PM4) |
| PRICE AND CPI CHANGE FACTOR (H:PM5) | | | |
| Contract Price Change (V24) | (-) | (+) | ACCEPT[1]*** |
| Absolute Value of Percent Price Change Between Annual Order Prices (V24A) | (-) | (+) | ACCEPT*** |
| Consumer Price Index (CPI) (V33) | (-) | (+) | ACCEPT* |
| COMPETITION FACTOR (H:PM6) | | | |
| Number of Firms Solicited (V11) | (-) | (+) | ACCEPT*** |
| Number of Firms Bidding (V13) | (-) | (+) | ACCEPT*** |
| Number of firms bidding:number of firms responding (V61) | (-) | (+) | N.S.[2] |
| CONTRACTOR'S PRICING TACTICS FACTOR (H:PM7A&B) | | | |
| Fixed-Bid-Price (V27) | (+) | (-) | ACCEPT** (H:PM7A) |
| Advantageous Pricing Terms (V38) | (+) | (-) | N.S.[2] (H:PM7A) |
| Percent Discount for Early Payment (V52) | (+) | (-) | N.S.[2] (H:PM7B) |

1 Accept, but the relationship is opposite from the one hypothesized.
2 N.S.means the relations is not significant at the 0.10 level of significance-value.

KEY: * Variable is significant at the 0.10 level of significance.
** Variable is significant at the 0.05 level of significance.
*** Variable is significant at the 0.01 level of significance.

TABLE XXX: HYPOTHESIS REGARDING EACH VARIABLE USED TO MEASURE THE INFLUENCE OF THE SELF-INTEREST MODEL

| EXPLANATORY VARIABLES: | RESPONSE VARIABLES: An increase in the explanatory variable will cause a corresponding increase (+) or decrease (-) in the probability of change in contractor. | | HYPOTHESIZED RELATIONSHIP |
|---|---|---|---|
| VARIABLE NAME (Variable number) | PROBABILITY OF THE INCUMBENT WINNING | PROBABILITY OF THE CHALLENGER WINNING | |
| POLITICAL VALUE OF LOCATION FACTOR (H:SIM1) | | | |
| Firm's Ward Location (1990 Census) (V5) | (+) | (-) | ACCEPT* |
| REGIME: POLITICAL VALUE OF ERA FACTOR (H:SIM2A&B) | | | |
| Presence of a Political Regime (V6) | (-) | (+) | N.S.[2] (H:SIM2A) |
| Power of the Political Regime (V58) | (+) | (-) | N.S.[2] (H:SIM2B) |
| CHANGE OF ELECTED AND APPOINTED OFFICEHOLDERS FACTOR (H:SIM3) | | | |
| Political Cohesiveness (V56) | (-) | (+) | N.S.[2] |
| Purchasing Cohesiveness (V57) | (-) | (+) | N.S.[2] |
| Staff Cohesiveness (V63) | (-) | (+) | N.S.[2] |
| ADMINISTRATIVE REVIEW TIME FACTOR (H:SIM4) | | | |
| Days Required for Pre-Bid and Bid Solicitation (TDAYS1) | (-) | (+) | ACCEPT** |
| Days Required for Bid Evaluation (TDAYS2) | (-) | (+) | N.S.[2] |
| Days Required for Review by Purchasing Agent (TDAYS3) | (-) | (+) | ACCEPT** |
| Days Required for Approval of Contract Recommendation (TDAYS4) | (-) | (+) | ACCEPT[1]** |
| Days Required for Contract Award (TDAYS5) | (-) | (+) | N.S.[2] |
| CONTRACT JUSTIFICATION FACTOR (H:SIM5 and H:SIM6) | | | |
| DBE Policy Administration (V65) | (-) | (+) | ACCEPT[1]*** (H:SIM6) |

TABLE XXX: HYPOTHESIS REGARDING EACH VARIABLE USED TO MEASURE THE INFLUENCE OF THE SELF-INTEREST MODEL (continued)

| VARIABLE NAME (Variable Number) | PROBABILITY OF THE INCUMBENT WINNING | PROBABILITY OF THE CHALLENGER WINNING | HYPOTHESIZED RELATIONSHIP |
|---|---|---|---|
| Simple or Complex (V25) | (-) | (+) | N.S.[2] (H:SIM5) |
| Number of Lines in Remarks Section (V53) | (-) | (+) | N.S.[2] (H:SIM5) |

1 Accept, but the relationship is opposite from the one hypothesized.
2 N.S.means the relations is not significant at the 0.10 level of significance-value.

KEY: * Variable is significant at the 0.10 level of significance.
** Variable is significant at the 0.05 level of significance.
*** Variable is significant at the 0.01 level of significance.

## b. Discussion of the accepted hypotheses when the policy and self-interest models are tested separately.

The discussion of the research hypotheses is based on the characteristic of logit analysis that calculates the probability of the occurrence of the lowest response value. This study used "0" to indicate no change in contractor, or the incumbent wins a consecutive annual-order contract, and "1" to indicate change in contractor, or the challenger wins the annual-order contract. The principal approach for discussing all accepted hypotheses will be based on the probability of the incumbent winning a consecutive annual-order contract, and the sign of the coefficient indicates the direction of the relationship.

Policy Model Hypotheses. The policy model explains 29.4% of the variance of change in contractor. Eight policy model

hypotheses are accepted at the 0.01 level of significance, one hypothesis is accepted at the 0.05 level of significance, and one hypothesis is accepted at the 0.10 level of significance. See Appendix L for the discussion of each accepted policy model hypothesis.

Policy Model Summary Remarks. All five factors explain change in contractor when the policy model was tested independent of the self-interest model. These findings provide strong support for the hypothesis that the policy model does explain change in contractor and implies the agency seeks low-cost goods and services. However, one finding suggests that the agency may not obtain low-cost goods and services from the incumbent contractor. This policy model variable suggests that the incumbent contractor enjoys a proprietary position within the agency's competitive bidding effort, because the incumbent is able to increase contract prices and still win contracts. Analysis of the percent change in contract prices shows that incumbents increase consecutive contract prices. If we accept the economic principle that lower prices are obtained when competition is present, then we can explain the incumbent's pricing advantages: incumbents face less competition. Analysis of the number of firms solicited and number of firms bidding suggests that the advantageous contract pricing enjoyed by the incumbent is created due to the lack of competition. Both

competition variables show that incumbents win consecutive annual-order contracts when competition is lowest.

On the other hand, incumbents may be giving the agency the best market price for goods and services. The two variables used to measure the low-bid position factor support the "best market price" explanation: low-bidder and percent low-bid. Both variables show that incumbents win a consecutive annual-order contract when they submit the lowest overall bid price and when the percent difference between their bid price and the next lowest bidder is the greatest.

These findings suggest that the incumbents are not only fully compliant with all the agency's requirements but provide goods and services at a significantly lower price than their next lowest priced challenger. Conversely, if the agency seeks to maximize competition for annual-order contracts routinely won by incumbents, the agency may have to reduce the performance specification standards, modify any restrictive contract terms and conditions, or accept standard commercial products and services to increase competition.

The advantages of the incumbent revealed in the above price-related variables are also revealed by two additional price-related variables: the absolute value of the change in contract prices and the consumer price index, CPI. The absolute value of

the change in contract prices reveals that incumbents are successful at winning a consecutive annual-order contract when there is only a slight increase or slight decrease in consecutive contract prices. This slight price change infers maximum price competition, and incumbents must be able to anticipate the price competition in order to submit the lowest overall price under narrow pricing margins. CPI is equally revealing of the incumbent's ability to win consecutive annual-order contracts. Incumbents are most likely to win a consecutive contract during low rates of inflation and lose consecutive contracts during high rates of inflation. Predictability of prices again offers the plausible explanation for the incumbent's success, because a low rate of inflation allows the incumbent to use their past contract experience to predict new contract prices. Whereas, high or run-away inflation rates make market prices less predictable.

Self-Interest Model Hypotheses. The self-interest model explains 12.2% of the variance of change in contractor. One self-interest model hypothesis is accepted at the 0.01 level of significance, three hypotheses are accepted at the 0.05 level of significance, and one hypothesis is accepted at the 0.10 level of significance. See Appendix M for the discussion of each accepted self-interest model hypothesis.

SELF-INTEREST MODEL SUMMARY REMARKS. Three of the five factors used to measure the influence of the self-interest model

explained change in contractor. The firm's location explained change in contractor, three different periods of administrative review explained change in contractor, and the enforcement of the agency's DBE Policy explained change in contractor. These factors support the hypothesis that elected and appointed officials influence the agency's contracting process. Although the self-interest model does not totally explain the change in contractor, it complements the policy model explanation.

The self-interest model suggests the presence of impropriety between the elected and appointed officials and incumbent contractors. Conversely, the policy model suggests the benefits of the impropriety: higher prices, bigger contracts, and more sales to the agency with less competition from challengers.

The self-interest model findings offer partial support for the ability of distributive politics theory to explain how the politician can influence the distribution of an agency's contracts: Ward location improves the incumbent's probability of success; the elected and appointed officials do not always perform value-free reviews of contract recommendations, and the administration of the DBE policy gives certified minority-owned businesses a competitive advantage when competing for annual-order contracts as a challenger. The discretionary decisions of the agency actors are found to influence contract award although

the influence is not as strong as found among the policy model factors.

c. Discussion of the joint influence of both the policy and self-interest models: Scenario A and Scenario B.

The findings reported in the previous section tested the independent ability of the policy model and self-interest model to explain change in contractor. Both competing models explained why contractors change. However, neither model operates exclusively. The agency's success in balancing the public good with political interests can only be tested by determining the probability of change in contractor as a function of the joint probability of both models. This section discusses the results of testing both models simultaneously in the same multivariate regression model. The last two columns in Table XXVIII report the findings of the joint influence of both models.

When the two models are tested jointly, two policy model variables and three self-interest model variables no longer explain change in contractor. These variables are the policy model's low-bidder and consumer price index variables and the self-interest model's location of firm based on the 1990 census, days for the purchasing agent's review, and days for executive staff and president's review variables. The influence of both the self-interest model and the policy model decreases when both

models are tested simultaneously in the same multivariate logistic regression. Thus simultaneous effect of both models lessens the influence of each model.

The policy model's influence lessens when the significance of whether or not the firm submits the lowest overall bid is reduced and when the influence of inflation is eliminated. The self-interest model's influence is lessened when the influence of the firm's location is eliminated and when two administrative review periods are eliminated.

The joint model still shows that the policy model dominates and explains change in contractor. Four of the five policy model factors explain change in contractor, and, still three other policy model factors have two variables that provide a significant explanation. Financial aspects, price changes, and competition all have two variables that explain change in contractor. On the other hand, only two self-interest factors explain change in contractor: days required for pre-bid and bid solicitation and DBE Policy Administration. The sign and value of all coefficients for both models are the same in the joint model as they are when the models are tested independently. Consequently, the explanation of each hypothesized relationship as discussed in the previous section is still valid for the relationships found significant in the joint model. Five measures still remain significant at the 0.01 level of

significance and five measures are significant at the 0.05 level of significance. No measures are significant at the 0.10 level of significance.

This section uses two scenarios to describe the joint effect of the policy and self-interest models on change in contractor. Scenario A describes the set of circumstances under which the incumbent contractor has a high probability of winning a subsequent annual-order contract, and Scenario B describes the set of circumstances under which the challenger has a high probability of winning an annual-order contract.

The variable values used for Scenario A and Scenario B are the values under which change in contractor is highly probable and the values under which change in contractor is least probable, respectively. The actual minimum and actual maximum values will not be used to determine the contracting circumstances for each scenario because of the sigmoidal shape of the probability distribution for each variable. Instead, this study will use the value that is within 15% of the maximum value and the minimum value for each variable in order to calculate how well the model can predict change in contractor for each scenario.

Table XXXI reports the coefficient of each of the 10 variables significant at the 0.01 or 0.05 level of significance,

the values that are within 15% of the maximum value and minimum value for each explanatory variable. Table XXXI shows the probability of no change in contractor under minimum and maximum variable values, and the table shows the net probability of change in contractor while holding all other variables constant. Five variables have a positive coefficient and increase the probability of the incumbent contractor's odds of winning a contract by 25.1%; the other five variables have a negative coefficient and decrease the incumbent contractor's odds of winning by 27.1%. Overall, the logit multivariate model of the two models jointly explains a 52.2% change[41] in the probability of the incumbent contractor winning a consecutive annual-order contract.

The joint effect of all variables is shown in Table XXXII and the chances of the incumbent winning, Scenario A, and the challenger winning, Scenario B. Table XXXII lists the variable values for each scenario. The table reports that the incumbent has a 78.7% chance of winning a subsequent annual-order under the variable values listed under Scenario A, and the challenger has a 99.8% chance of winning an annual-order contract under the variable values listed under Scenario B.

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[41]See Appendix N for the calculation of the 52.2% change. This is the second measure of the model's ability to explain change in contractor. The first method reported in this study is the $R^2$ value reported in Table XXVIII which showed the regression explains 35.3% of the variance in change in contractor.

TABLE XXXI: THE EFFECT OF THE SIGNIFICANT VARIABLES ON THE INCUMBENT'S PROBABILITY OF WINNING A CONSECUTIVE ANNUAL-ORDER CONTRACT.

| | | PROBABILITY OF NO CHANGE IN CONTRACTOR WITH MINIMUM VARIABLE VALUE[1] | | | PROBABILITY OF NO CHANGE IN CONTRACTOR WITH MAXIMUM VARIABLE VALUE[1] | | HOLDING ALL OTHER VARIABLES CONSTANT |
|---|---|---|---|---|---|---|---|
| VARIABLE NAME AND VARIABLE NUMBER | COEFF. | MINIMUM VARIABLE VALUE[2] | PERCENT CHANCE INCUMBENT WINS[4] | | MAXIMUM VARIABLE VALUE[3] | PERCENT CHANCE INCUMBENT WINS[4] | PERCENT DIFFERENCE EXPLAINED BY THE VARIABLES UNDER REVIEW |
| Annual Sales to the Agency (V7) | .000707 | $4,000 | 6.3% | | $750,000 | 10.2% | 3.9% |
| Authorized Expenditure (V28) | .00128 | $15,000 | 6.7% | | $200,000 | 8.3% | 1.6% |
| Percent Low-Bid (V10) | .0395 | 1% | 5.0% | | 22% | 10.8% | 5.8% |
| Percent Price Change (V24) | .0474 | -9% | 4.9% | | +9% | 10.8% | 5.9% |
| Absolute Value of Percent Price Change (V24A) | -.0743 | 0% | 13.3% | | 15% | 4.8% | -8.5% |
| No. of Firms Solicited (V11) | -.0536 | 8 firms | 9.6% | | 18 firms | 5.8% | -3.8% |
| No. of Firms Bidding (V13) | -.1698 | 1 firms | 12.2% | | 6 firms | 5.6% | -6.6% |
| Firm or Escalated Price (V27)[5] | .9572 | 0=escalated price | 5.7% | | 1=firm price | 13.6% | 7.9% |
| Days for Pre-Bid and Bid Solicitation (TDAYS1) | -.00206 | 74 days | 8.6% | | 213 days | 6.6% | -2.2% |
| DBE Policy Administration (V65)[5] | -1.1572 | 0=NON-DBE firm | 9.0% | | 1=DBE firm | 3.0% | -6.0% |

1 Logistic regression calculates the probability of obtaining 0, or no change in contractor, is Pr(Y=0)=p, and the probability of obtaining 1, or change in contractor, is calculated based on the theory of probability for two mutually exclusive events, i.e., Pr(Y=1) = (1-p) or 1-pr(Y=0). See Appendix N-A for the detailed calculation of the percent change incumbent wins reported in this table.

2 Minimum value is within 15% of the variable's actual minimum value except for the two binary variables where the minimum value is the lowest of the two values.

3 Maximum value is within 15% of the variable's actual maximum value except for the two binary variables where the maximum value is the highest of the two values.

4 Logit $(p)_i$, where $p=e^{\text{logit}(p)_0}/(1+e^{\text{logit}(p)_0})$ and percent chance=px100%

5 V27 and V65 are binary variables.

| TABLE XXXII: SCENARIO A AND SCENARIO B | | | | |
|---|---|---|---|---|
| VARIABLE NUMBER | VARIABLE NAME | SIGN OF PROBIT COEFFICIENT | SCENARIO A[1]: HIGH PROBABILITY INCUMBENT CONTRACTOR WINS | SCENARIO B[2]: HIGH PROBABILITY THE CHALLENGING FIRM WINS |
| V7 | Annual Sales to the Agency | (+) | $ 750,000 | $ 4,000 |
| V28 | Authorized Expenditure | (+) | $ 200,000 | $ 15,000 |
| V10 | Percent Low-Bid | (+) | 22% | 1% |
| V24 | Percent Price Change | (+) | +9% | -9% |
| V24A | Absolute Value of Percent Price Change | (-) | 0% | 15% |
| V11 | Number of Firms Solicited | (-) | 8 firms | 18 firms |
| V13 | Number of Firms Bidding | (-) | 1 firms | 6 firm |
| V27 | Firm or Escalated Price | (+) | 1=firm price | 0=escalated price |
| TDAYS1 | Days for Pre-Bid and Bid Solicitation | (-) | 74 days | 213 days |
| V65 | DBE Policy Administration | (-) | 0=non-DBE Firm | 1=DBE Firm |
| Probability of winning the an annual-order contract ($p_0$ and $p_1$ times 100%) | | | 78.7% | 99.8% |

[1] The multivariate logistic regression is coded to calculate the probability of an incumbent contractor winning a consecutive annual-order contract as $\text{logit}(p)_0$, where $p_0=e^{\text{logit}(p)0}/(1+e^{\text{logit}(p)0})$ and percent chance=$p_0$x100%.

[2] The probability of the challenger winning an annual-order contract is maximum when the probability of the incumbent winning a consecutive annual-order contract is minimum; when $\text{logit}\ (p)_1$ is maximum where $p_1=1-p_0$.

See Appendix N-B for calculation of the probability of winning an annual-order contract.

The joint model's ability to predict such a high success rate make these 10 variables powerful predictors of the circumstances under which incumbent and challengers experience their greatest success.

Scenario A tells us that incumbents win 78.7% of the time when the following eight circumstances occur jointly in a same contracting event.

1. Incumbents win when they have high annual sales to the agency and the dollar value of their sales to the agency is significantly more than the average authorized contract expenditure for the annual-order they win. This relationship implies successful incumbents are also successful at winning several other annual-order or one-time overmoney contracts from the agency.

2. Incumbents win when the agency's authorized contract expenditure represents a major commitment of goods and services to meet its annual needs, and the commitment could not be satisfied in smaller, or under $10,000, lots using one-time purchases without subjecting the agency to the criticism of chaining[42].

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[42]Chaining is the intentional practice of initiating, processing, and approving multiple under-$10,000 purchase orders for the same item or service within an unreasonable period, where those orders for the same item or service in sum exceed $10,000. (CTA, 1992, p.1)

3. Incumbents win when they submit contract bid prices that are significantly lower than the next lowest bidder. If this measure was considered by itself, we would conclude that successful incumbents provide goods and services at the lowest price. However, the following measure suggests otherwise.

4. Incumbents win when they increase their last contract price. This finding contradicts the tentative conclusion that incumbents provide the lowest priced goods and services by significantly underbidding the next lowest bidder. Apparently, successful incumbents frequently face little price competition, and they do not feel pressure to underbid their previous contract price in order to ensure that they are awarded a consecutive annual-order contract. Challengers win an annual-order contract by undercutting the previous contract price. This finding causes us to doubt whether the incumbents provide goods and services at the lowest price when facing few competitors.

5. Incumbents win a consecutive annual-order contract when the net change in contract prices is least and suggests that price competition is greatest. The absolute value of the change in consecutive annual-order prices measures the net change in contract prices. When the net change is 1% or 2%,

we infer price competition is greatest. This finding suggests that incumbents do not significantly undercut their previous contract prices, and the finding offers a partial explanation as to why incumbents do not do well during unstable economic times; incumbents adjust their prices only in small increments.

6. Incumbents win when they face very few competitors. Incumbents generally win when the agency solicits only a few firms and when the market produces only one or two bids. At best, the agency meets the minimum criteria set for a competitive procurement when incumbents win a consecutive annual-order contract.

7. Incumbents win large annual-order contracts when the agency's officials quickly update bid documents and solicit bids. The quick review of the bid documents and solicitation of bids implies that these annual-orders are re-solicited with little scrutiny or no change to the bid documents from the previous year. The quick review and solicitation of bids also implies that these annual-orders describe commercial-grade products or services, however the failure to obtain competitive bids suggests the agency may have standardized the bid documents for goods and services that are unique to the agency rather than standard industrial products.

8. Incumbents win when they are a non-DBE firm. DBE certification gives the firms an advantage when competing as a challenger, but DBE certification is a disadvantage when competing as an incumbent contractor.

Scenario B tells us that challengers win 99.7% of the time when the following eight circumstances occur jointly in a contracting event.

1. Challengers win when their average annual sales to the agency are generally less than the agency's average authorized annual-order contract expenditure. This relationship implies that successful challengers win only one annual-order contract, because they are not successful at winning contracts from the agency when their average annual sales to the agency are even or exceed the agency's average annual-order contract expenditure.

2. The challengers win when the authorized contract expenditure is near $10,000, or the agency's minimum annual expenditure required for an overmoney procurement. This means the agency could meet its needs through two or three informal bid solicitations without being accused of chaining.

3. Challengers win contracts when the difference between bid prices is a small percentage. That the percentage is small

suggests that challengers face price competition. If we assume challengers know the last contract price prior to time of bidding, all challengers along with the incumbent are bidding prices clustered about the last contract price. The next four circumstances support the belief that challengers face stiff competition.

4. Challengers win when they underbid significantly the last contract price in order to ensure award of contract. This finding suggests that successful challengers face more price competition than successful incumbents.

5. Challengers win when they face the greatest amount of competition, that competition being measured by both the number of firms solicited by the agency, and the number of firms that actually submit a bid price.

6. Challengers win small annual-order contracts when the agency's officials take more time to update bid documents and solicit bids. The extended time for the review of the bid documents and solicitation of bids implies that these annual-orders are re-solicited after a lot of scrutiny or change to the bid documents from the previous year. The reason for the extended review may be that the agency is trying to make the requirements more competitive by issuing

an addendum or extending the bid solicitation to give firms more time to prepare their bids.

7. Challengers win an annual-order contract when they are certified as a DBE firm.

The two scenarios describe a bid environment that is tilted in favor of the incumbent contractor. Both models show that incumbents enjoy some distinctive advantages when they bid for high dollar-value contracts and that challengers are at a disadvantage when they bid for these high dollar-value contracts. Scenario A shows that incumbents win when they are non-DBE firms with a history of frequent sales to the agency. They continue to win high dollar-value contracts with firm prices while facing minimum competition from challengers and in some cases little price competition. Incumbents win bids by large margins and do not undercut their last contract price. The elected and appointed officials do not scrutinize the contract awards, although they do scrutinize the award to a challenger. Scenario B shows us that winning challengers are indeed DBE firms but with less frequent sales to the agency, and the challengers are more likely to win small contracts while facing maximum price and firm competition; challengers win the bid by decreasing contract prices below the incumbent's last contract price. The difference between the two scenarios verifies that the agency needs to

maintain the procurement mandate to keep the playing field level, or tilted in favor of the challenger.

## E. Concluding Remarks

The empirical findings presented in this chapter answer the three questions posed in Chapter I on page 4 and addresses the concern about impropriety between elected and appointed officials and incumbent contractors, or about cozy relationships at the agency.

1. Does an agency's contracting process result in the purchase of goods and services at the lowest competitive price?

There is doubt whether the agency obtains goods and services at the lowest competitive price even though the policy model's explanation of change in contractor is compelling and substantiates that economic factors do explain the agency's contract decisions. The doubt is created, because incumbents are more likely to win large dollar-value contracts, face the least competition, and increase their contract prices. Challengers, who face the stiffest competition and lower contract prices, are more likely to win small dollar-value contracts. These relationships cannot result in goods and services at the lowest competitive price. However, the policy model shows the agency will obtain low cost of goods and services when it maintains free and open competition.

2. Do politicians use their position to influence an agency's contracting process to reward their allies with contracts?

Whether politicians use their position to influence the agency's contracting process is only partially answered by this study. Some political influence was found when the self-interest model was tested without the policy model. The firm's location, three administrative review periods, and the agency support of the DBE policy offered a compelling explanation for change in contractor. When the self-interest model was tested simultaneously with the policy model, only two self-interest factors explained change in contractor while all five policy model factors still explained change in contractor. This finding implies that political influence is selective rather than systemic and that the adherence to procurement policy lessens political influence. Chapter 8 will revisit the role of distributive politics and political influence in the agency's contracting process by sorting the population sample into seven contract pools and by a micro-analysis to determine the influence of change in mayor and type of firm on change in contractor.

3. Do government bureaucrats strategically distribute contracts to maximize support for themselves?

Whether government bureaucrats strategically distribute contracts to maximize support for themselves is only partially

answered by this study. The first stage of the agency's contracting process, the time during which bureaucrats review the bid documents and solicit a bid, was found to be biased towards the incumbent contractor. This favoritism towards the incumbent by the agency's bureaucrat substantiates only half the equation by which bureaucrats can maximize support by giving incumbents a reason to favor them. This study does not test for the other half of the equation to determine whether the incumbents actually support the bureaucrats. Although this study does not investigate whether incumbent contractors support the bureaucrats, the incumbent contractors' support can be implied from press reports published during the research period that documented instances of bribes and kickbacks between some agency officials and some incumbent contractors.

The next chapter examines how the public officials exercise their discretionary decisions to influence the agency's contracting process.

# VII. CASE STUDY

## A. Introduction

This chapter analyzes the agency's contracting process to show how public officials use their discretionary decisions to influence the agency's annual-order contracts. The empirical findings reported in Chapter VI show that public officials influence the agency's contracting process through both the policy and self-interest models. The policy model offers the dominant explanation through eight economic variables, and the self-interest model offers a less compelling explanation through two political variables. The self-interest model, and under some circumstances the policy model, showed that the playing field was not always level. The inference is that the public officials exercised their discretion to tilt the playing field to reward some bidders. In this chapter we will examine four areas under which public officials exercise discretionary decisions to influence the agency's contracting process.

The selected contracts for the case study are drawn from the total population sample of 800 contracts. The values of the ten variables[43] that explained change in contractor in Chapter VI are used to find contracts that represent Scenario A and B[44]. Four

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[43]See Table XXXII in Chapter VI.

[44]Scenario A explains the circumstances under which the incumbent contractor has a high probability of winning a consecutive annual-order contract, and Scenario B explains the circumstances under the challenger has a high probability of winning an annual-order contract.

contracts were selected from the total population sample, because the contracts met the joint probability of eight of the ten variables[45]. Two contracts represent each scenario: Scenario A is represented by annual-orders for glass cleaner[46] and high speed twist drills[47] and Scenario B is represented by annual-orders for sheet aluminum[48] and the rewinding, rebuilding, or exchange of General Electric Traction motors[49].

In addition to the ten variables, two other criteria are used to ensure that the four selected contracts fairly represent each scenario. First, other contiguous annual-orders for the same commodity were identified from the sample population to

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[45]The database of 800 contracts is sorted using the joint probability of eight of the ten variables that explain change in contractor. The mean value of each variable is used as the threshold between the incumbent and the challenger winning an annual-order contract. No contracting events fit the joint probability of all ten significant variables. I decided to eliminate two variables from the joint probability sort. The two variables are v24A, the absolute value of price change, and V27, firm or escalated price. These variables were chosen for elimination, because other variables measure the same phenomenon; V24, percent change in contract prices between consecutive annual-order contract, and V10, percent low bid, are included among the other eight variables and provide similar measures as the two variables eliminated. See Table LXI in Appendix O for the threshold values used to identify each type of contracting event.

[46]Glass cleaner, contract no. 000342, issued in 1991. The contract value is $25,000, 18 firms were solicited, seven firms submitted a bid price, and no firms submitted a "no bid" response.

[47]High speed twist drills, contract no. 100477 issued in 1991. The contract value is $50,000, 17 firms were solicited, seven firms submitted a bid price, and three firms submitted a "no bid" response.

[48]Sheet aluminum, contract no. 800222, issued in 1989. The contract value is $250,000, 12 firms were solicited, two firms responded with a bid price, and no firms submitted with a "no bid" response.

[49]Rewinding, rebuilding, or exchange of General Electric traction motor generator, contract no. 700537A issued in 1987. The contract value is $596,000, 4 firms were solicited, 12 firms submitted a bid price, and 1 firm submitted a "no bid" response.

ensure that the selected contracts are similar to previous and subsequent purchases of the same commodity. Second, SIC numbers were used to determine whether adequate market competition is present for all four selected contracts.

In order to test for the first criteria, I identified all contiguous contracts for each selected contract. Tables 1, 2, 3, and 4 in Appendix O report the values for all ten variables that explain change in contractor. The results reported in these tables show that the selected contracts are similar to the other annual-order contracts for the same material requirement and show that the sets of contiguous contracts do fairly represent the difference[50] between the two scenarios as modeled in Chapter VI.

In order to test for a competitive market[51], I used the ABI database to identify the number of firms listed under each commodity for the selected contracts. The four-digit SIC number confirmed that substantial competition exists in the state of Illinois and the United States for all four commodities. Table 7 in Appendix O reports these results. The agency should be able to solicit 10 or more firms for each annual-order and receive at least three competitive bids.

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[50]See Table LXVI in Appendix O, "Average Difference Between Scenario A and B Annual-Order Contracts."

[51]See Appendix C for a the definition of full and open competition.

B. Administrative Review Process

The public perceives government procurement as a simple decision making process for the sealed bid method of procurement[52]: the low bidder wins the contract. If their perception is true, the public has the right to know how such a simple decision, awarding to the lowest bidders, can be prone to influence by public officials.

The public needs to know two things: (1) price[53] comparisons are not as simple as commonly perceived by the public, and (2) the agency's contract decisions are subject to influence by public officials. This is because it is the public officials' responsibility to make certain discretionary decisions needed for each contract award. So the question is not whether the public officials influence the agency's contracting decisions, but rather in what way do they influence the contract decisions: for the public good or their own self-interest?

The next section describes four discretionary decisions where the agency's contracting process is open to the influence of the public official. Given an understanding of the discretionary decisions and the array of people who make those

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[52]"Sealed bid method of procurement" is the government term generally refereed to by the public as simply "bidding the requirement," and the public expects the government to take the lowest bidder and pay a "low price." See Appendix C for FTA's definition of "sealed bid."

[53]See Appendix C for definitions of price, price analysis, adequate price competition.

decisions, the public can start to understand the way in which the agency's contracting process is influenced by the public officials.

C. Agency's Contracting Process

The central problem of this case study is to explain how public officials exercise their discretionary decisions and how those discretionary decisions are used to service the public good or the officials own self-interests. This section will explain four principal areas where the agency officials make their discretionary decisions. These areas[54] are intended to ensure that free and open competition is maximized for each sealed bid and to reduce or eliminate the ability of any public official to influence the agency's contracting process for their own self-interests. The four principal areas are: competitive specifications, public notice, responsive and responsibility reviews, and DBE compliance reviews.

1. Write competitive specification[55] that is not restrictive.

The detailed specification is the first step in government procurement contracting process, because it establishes the basis for evaluating price. Procurement policy requires that the

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[54]The agency has more than these five areas of review, but these five areas are the principal areas where the public official can influence the agency's annual-order contracts and are good examples to use in order to illustrate what occurs in the blackbox of purchasing.

[55]See definition of "competitive specifications" in Appendix C.

lowest priced responsive[56] and responsible[57] bidder be awarded the contract under the sealed bid method of procurement. This means the lowest bidder must be fully compliant with the specifications[58]. The agency's officials exercise their discretion by establishing the specification standards. Procurement policy clearly recognizes the importance of the specification in assuring full and open competition. FTA[59] issued the following directive regarding competition[60] that shows the importance of the specification.

> Full and Open Competition. All procurement transactions will be conducted in a manner providing full and open competition. Some of the situations considered to be restrictive of competition include, but are not limited to;...(6) The specification of only a "brand name" product without listing its salient characteristics and not allowing "an equal" product to be offered;... (FTA Circular 4220.1C, page).

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[56]See definition of "responsive" in Appendix C.

[57]See definition of "responsibility" in Appendix C.

[58]Compliance with the specification is part of the responsive and responsibility review.

[59]The FTA regulatory guidelines are guidelines that are common to other agency procurement regulations. In fact the specifications guidelines quoted in this section are generally accepted throughout government procurement.

[60]See definition of "Competitive Specifications" in Appendix C.

However, a detailed specification does not guarantee the agency will receive competitive bids. A limited bid response can still result for any one of three reasons: (1) limitation of the market to provide a good or service, (2) inability of the public official to adequately describe the needed good or service to encourage competition, or (3) use of a restrictive specifications by the public officials to limit competition and favor a particular supplier.

2. Give Public Notice[61] to the Market.

Formal advertising is used for fixed price contracts in excess of $5,000 in order to ensure that all potential bidders are given public notice and adequate time to submit their sealed bid. The public official determines the timing, duration, and influences distribution of the public notice. As a general guideline, a solicitation period of 14 days or more is recommended for standard commercial goods and services and at least 30 days is recommended for nonstandard goods and services. The bid notice is advertised in newspapers of general circulation in the agency's market area, mailed to known suppliers, and posted in a public place at the agency. The annual-orders under study are for standard goods and services so the public notice period is generally 14 days.

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[61]See definition of "formal advertising" in Appendix C.

However, three problems associated with the public notice can reduce free and open competition.

(1) The normal one-day, one-time public notice may not be seen by potential bidders even though the solicitation period lasts 14 days. Procurement policy assumes that a competitive market will find the public notice once it is published in the newspaper or mailed to interested firms. The problem is that the market is not perfect and information is not uniformly, simultaneously, and instantaneously distributed to all potential sellers.

(2) Non-standard goods or services. If the goods or services are not a commercial standard, the challenger will generally need more than 14 days to source the good or service and prepare their best price proposal. Procurement policy expects the agency officials to select the right duration for the solicitation period for the type of good or service being purchased in order to keep the playing field level for all firms. This may not always occur, because the public official may not have the market insight to decide the proper duration of the public notice.

(3) Intentionally brief solicitation period or advance notice. The agency officials can set a brief solicitation period to favor a particular contractor. A short bid solicitation

period can be combined with advanced verbal notice to the favored firms that the requirement is coming up for bid. This gives the favored firms a great time advantage.

3. Perform Responsive and responsibility reviews.

Procurement policy does not dictate that the lowest bidder be awarded a contract. Rather procurement policy states that the lowest responsive and responsible bidder should be awarded the contract. Article 54.2 of CTA's Regulations Governing Purchase and Sales Transactions states,

> ...all purchase orders[62] or contracts of whatever nature for the purchase, lease or sale of personal property, materials or supplies, labor, service or work involving amounts in excess of $10,000 made by or on behalf of the Authority, shall be let by free and open competitive public bidding, after public notice, to the lowest responsive and responsible bidder,...

Thus, price is not the only factor considered before award of contract; responsiveness and responsibility of the lowest bidder are also considered by the public officials. Responsive and responsibility reviews are the evaluation of bids using the solicitation and contract documents[63] as the basis for acceptance or rejection of a bid.

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[62]Except as otherwise provided for in Section 54.3, "Contracts Not Requiring Competitive Bidding."

[63]The agency's bidding and contract documents include the detailed specifications, general terms and conditions that apply to all the agency's contracts of a similar nature, and special terms and conditions that are unique to the particular good or service being purchased.

The contract officer and purchasing agent are the principal public officials responsible for performing the responsive and responsibility reviews. Both officials use their discretion in determining whether a bid is responsive and responsible, but they do have the clear directive to award the contract only to the lowest priced responsive and responsible bidder. The FTA directive reads:

> Awards to Lowest Responsive, Responsible Contractor. Grantees shall make awards only to responsible contractors possessing the ability to perform successfully under the terms and conditions of a proposed procurement. Consideration shall be given to such matters as contractor integrity, compliance with public policy, record of past performance, and financial and technical resources. (FTA Circular 4220.1C page 6).

The public official's discretion enters into the evaluation of responsiveness and responsibility primarily due to time limitations. Responsive and responsibility reviews that overturn every stone are extremely time consuming and impractical whether the reviews are of the incumbent or challenger. The public official's discretion is greatest at this stage, because the principle of "bounded rationality"[64] applies. The contract will be unduly delayed if all responsive and responsibility criteria were reviewed and verified in detail and beyond a reasonable

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[64]Herbert Simon, Richard Cyert, and James March use this concept in their thinking about the theory and practice of management. Bounded rationality means that a public official can't know everything; so if he wants to do anything, he must replace "optimizing," finding the best answer, with "satisficing," finding an acceptable answer. "In the real world, according to 'bounded rationality,' problems need only be solved satisfactorily, not perfectly." (Kuhn, p.184). See Herbert Simon, Administrative Behavior, The Free Press, NY, 1976; Richard Cyert and James March, A Behavior Theory of the Firm, Prentice Hall, Englewood Cliffs, NY, 1963.

doubt. The public official must decide when to seek additional information or when enough information is already available to make the best decision. Time and information limitations are part of normal business and whether the right or wrong decision is made, in retrospect, the present circumstances usually drive the need to make a decision with the available information. Consequently, this fundamental step depends most on the experience, knowledge, and ethics of those public officials involved in the agency's contracting process to ensure their discretionary decisions are made with the intent to maximize the public good rather than to maximize their self-interests.

4. Perform a DBE[65] Compliance Review

CTA's DBE Policy[66] requires the agency to maximize the opportunity for DBE firms to participate in contracts financed in whole or part with federal funds[67] and all contracts in excess of $10,000 have a 30% DBE participation goal. This means the lowest overall responsive and responsible bidder who also commits to a 30% DBE participation will win the annual-order contract. A bidders's failure to commit to a DBE participation at time of bid

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[65]See definition of "DBE" in Appendix C.

[66]Disadvantaged Business Enterprises (DBEs) as defined in the United States Department of Transportation Regulation 49 CFR, Part 23 and Section 106(c) Surface Transportation and Uniform Relocation Assistance Act of 1987. See Appendix D "The Agency's DBE Policy" for a detailed explanation of the agency's DBE policy. Also see FTA C 4220.1i, pgs I-10 and I-11.

[67]CTA considers federal funding to affect all their purchases and therefore applies the 30% DBE goals to all purchases unless modified for individual purchases.

opening causes their bid to be declared non-responsive and no longer considered for award of contract. On the other hand, a bidder who commits to a partial DBE participation is still considered but subject to two different decision rules. The first rule I will call the "10% differential" rule and the second I will call the "percent for percent" rule.

(1) 10% Differential Rule: If the lowest overall bidder does not fully comply with the DBE goal, but the next lowest bidder complies fully with the DBE goal then the agency is willing to pay up to 10% more for the good or service to achieve the 30% participation goal.

(2) Percent for Percent Rule: If none of the bidders fully comply with the 30% DBE goal, but some bidders do partially comply with the goals, then the agency makes their best effort to maximize the DBE participation while minimizing the increase in price by exchanging a one percent increase in price for a one percent increase in DBE participation.

In many bidding situations, the incumbent contractor should have a competitive advantage due to insider knowledge[68]. However, public officials can exercise discretionary decisions in one or more of the aforementioned areas to ensure a level playing field. The following section explores how the agency

[68]See Chapter 2 for a description of insider knowledge.

officials handled the selected contracts and identified where their discretionary decisions played a role (influenced) the agency's contract award decisions.

## D. Administrative Discretion Exercised

This section discusses the selected contracts and their contiguous contracts to show how the agency's officials used their discretionary decisions to make final contract awards. Four results are apparent from the review in this section: (1) the lowest overall bidder was not always successful in winning a contract, (2) DBE compliance played a significant role in the annual-order contract decisions, (3) lack of competition was found among some requirements, (4) inflated annual-order contract values may have decreased competition.

### 1. Award not always to the lowest overall bidder

Table XXXIII summarizes the basis for the contract awards and shows that price was not the principal factor used to determine the successful contractor for the contracting events that best fit Scenario A and Scenario B. The public would not expect this finding for a publicly bid item. Table XXXIII shows that the agency official exercised considerable discretion to decide which firms should win the contract.

Table XXXIII summarizes the reasons the agency used to award the eighteen contracts included in this analysis. Only six

contracts, shown in rows 2 & 4, were awarded to the lowest overall bidder resulting from competition. The other twelve contracts required the public officials to review the bidders' submittal and to make the award decision based on non-price factors.

TABLE XXXIII: SUMMARY OF CONTRACT RECOMMENDATION REMARKS

| ROW NO. | NUMBER OF CONTRACT RECOMMENDATIONS | BASIS FOR AWARD OF CONTRACT |
|---|---|---|
| 1 | 1 | Award to an only bid without further review or negotiations. |
| 2 | 2 | Award to the lowest overall bidder who is also DBE compliant. |
| 3 | 2 | 10% differential applies. Low-bidder is not DBE compliant, but was awarded the price because their price was 10% lower than the lowest DBE compliant bidder |
| 4 | 4 | Price was the only basis mentioned as a basis for award of contract. |
| 5 | 4 | Low-bidder was by-passed for failure to comply with DBE goals. |
| 6 | 5 | Price and other factors such as approved source, lack of competition, and assurance of supply was noted as a factor in award of contract |

NOTE: Appendix G contains the full text of the contract recommendation.

## 2. DBE compliance review and firm profile

The DBE compliance review influenced the agency's final contract decisions. In 4 of the 18 contracts shown in Table XXXXIII, the lowest overall bidder was rejected, or by-passed, due to their failure to comply with the DBE goals. Two contracts shown in row 3 were awarded to the lowest overall bidder, but the award was made only after the application of the agency's "10%

differential" rule. In these two cases, the lowest overall bidder was more than 10% below the next lowest firm who was in full compliance with the 30% DBE goals. Had the price difference been less than 10% for those two contracts, the overall low bidder would have been bypassed.

The selected contracts also fairly represent Scenario A and Scenario B in accordance with the Chapter VI findings which found that non-DBE firms win as incumbents and DBE's firms win as challengers: 11 of 12 incumbents who won Scenario A contracts are non-DBE firms; 5 of 7 challengers who won Scenario B contracts are DBE firms. In addition, DBE firms lost consecutive annual-order contracts to DBE firms. The annual-order contracts for glass cleaner show that DBE firms won all four contracts, but three DBE firms won as challengers, and only one DBE firms won as an incumbent contractor.

A detailed profile of successful non-DBE firms and DBE firms describes firms that are even more diametrically opposed than suggested by Scenario A and Scenario B. Table LXVIII in Appendix O shows the profile of successful non-DBE firms and Table LXIX in Appendix O shows the profile of successful DBE firms. Ironically, all non-DBE firms win as incumbents and all but one DBE firm wins as a challenger.

Table XXXIV summarizes the difference between successful non-DBE firms and successful DBE firms during the period of the study.

TABLE XXXIV[69]: AVERAGE CHARACTERISTICS OF THE SUCCESSFUL NON-DBE CONTRACTORS AND DBE CONTRACTORS[70]

| CONTRACT CHARACTERISTIC | NON-DBE CONTRACTOR | DBE CONTRACTOR |
|---|---|---|
| Firm Start Date | 1926 | 1982 |
| Total Sales of firm | $146,100,000 | $4,063,500 |
| Total number of accounts | 8,056 | 276 |
| No. of employees in Chicago | 147 | 5.4 |
| Total number of employees | 388 | 8.1 |
| Size of facilities | 175,000 sq.ft. | 9,300 sq. ft. |
| Number of failed businesses | 0 | 2 |

The profile of the non-DBE and DBE firms offers one explanation as to why the non-DBE firms can maintain a competitive edge in winning consecutive annual-order contracts and why DBE firms are not successful at winning high-dollar value contracts. Not only do non-DBE firms have greater sales to the agency, but they also have greater total sales, more employees,

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[69]See Appendix O, Tables LXVIII and LXIX for additional details regarding non-DBE firms and DBE firms, respectively.

[70]Information of the firm is obtained from D&B reports, 1995.

more customers, significantly larger facilities, and have been in business a half century longer.

3. Lack of competitive bidding

Only one of the eighteen contracts is awarded to an only bidder. Award of contract to an only bidder should not be considered an award to the lowest overall bidder because there is no price competition to determine whether the price is the lowest obtainable market price. Therefore, an award to the only bidder cannot be considered an award to the lowest all bidder.

An only bid award should not have occurred among these types of contracts and the award of a contract to an only bidder without negotiations is not an accepted government procurement practice. Yet both occurred. The agency awarded a $291,000 contract to an only bidder for the rewinding or rebuilding of electric motors even though considerable competition exists in the U.S. and state of Illinois for this service. Table 7 in Appendix O reports that 5,027 firms offer similar services in the U.S. and 267 firms offer similar services in the state of Illinois. In spite of this competition for the rewinding or rebuilding of electric motors, the agency received only one bid for this service under contract no. 900537 and was successful in obtaining between two and four bids for the other similar contracts included in the sample. In fact, the agency noted on one of its contract recommendations, 900537, that non-bidding

firms believed that the agency created a "non-competitive" environment for this requirement. There is some truth to this claim when we look at the reasons for rejecting a low-bidder's price in the few cases where they did receive a competitive price: time-urgency supply and firms is not on the approved list. The competition claims that the agency officials gave too short a public notice for an item that may not be a standard, commonly available, service and used a restrictive specification.

Also, the agency never explained why they only had one or two firms on the approved vendor's list when there were hundreds if not thousands of available companies who were in the business of repairing or rebuilding electric motors. The agency could have increased competition by lowering the dollar value of the contract, issuing multiple contracts to test new firms, or doubling their efforts to increase the number of firms on the approved vendor's list. For four of the five contracts, the agency did not obtain any significant competition and the result was price increases of 80%, 34%, 22% and 4%. On the other hand, when a challenger won one of the contracts, the agency saw a price decrease of 5%. Interestingly, the subsequent contract award made to the previous challenger, who was now winning as an incumbent contractor, increased the price 80%. Apparently, incumbents, whether they are continuous winners or occasional

winners, seem to gain the competitive edge[71] to allow them to win a consecutive annual-order contract at higher than market prices.

4. Contract dollar-value

The statistical analysis in Chapter VI showed that the dollar-value of an annual-order contract influences the degree of competition for a contract. Less competition is received for higher dollar-value contracts and the incumbent's chances of success are increased when competition is decreased. On the other hand, more competition is attracted for the lower dollar-value contracts, and the challenger's chances of success increase when competition is increased. However, the agency does not manipulate the annual-order dollar-value to stimulate or defuse competition. As discussed in Chapter V, the authorized expenditure is an internal value that is established based on need and/or estimated usage rather than because of its impact on competition for the annual-order contract. Generally, the manager of the using department requests an authorized expenditure based on the previous year's usage, the availability of funds, and estimation of future needs. The manager adds an estimated buffer to avoid underestimating the requirement's

[71]The competitive edge is assumed to the "insider knowledge" as previously discussed.

annual cost and returns to the board with an increased expenditure request[72].

Even though there is no evidence that the agency uses the authorized contract expenditures intentionally as a barrier for competition, never-the-less, the higher contract dollar-value does make the challenger meet more restrictive requirements that smaller firms can't overcome: plant size, available staff, and sale all greatly impact a firms capacity to perform on larger contracts. The counter-argument to reducing the dollar-value of contracts is that the agency should not spend its money and time to split an annual-order requirement that can be more efficiently purchased under one contract. If split, many of the large contracts would still need formal solicitation if the dollar-value were reduced and the agency would have to issue several contracts and would have to monitor several contractors instead of only one.

However, the agency can significantly reduce the authorized expenditure without incurring the risk of underestimating the actual demand or reducing or splitting the contract size for the product or service. An internal analysis performed by the agency's purchasing staff during the early 1990's reported that approximately 56% of all annual-order contracts in excess of

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[72]Generally, the Transit Board does not like to see requests for increased expenditures. During some time periods, the Transit Board strongly opposed any increased expenditure request.

$10,000 over a four-year period had expired with more than 50% of their authorized expenditure left unspent. The authorized expenditure left unspent is estimated at $75,136,975 for the four-year period, or an average of $18,784,240 of excess authorization per year as shown in Table XXXV.

TABLE XXXV: OVERMONEY ANNUAL-ORDER CONTRACTS THAT EXPIRED DURING 1990, 1991, 1992, AND 1993 WITH MORE THAN 50% OF THE AUTHORIZED EXPENDITURE LEFT UNSPENT

| NUMBER OF CONTRACTS | MEDIUM AUTHORIZED EXPENDITURE | RATIO OF CONTRACTS WITH MORE THAN 50% UNSPENT EXPENDITURE | ESTIMATED DOLLAR VALUE OF EXCESS AUTHORIZED EXPENDITURE |
|---|---|---|---|
| 293 | $17,500 | .59 | $23,025,225 |
| 248 | $37,500 | .53 | $ 6,916,500 |
| 253 | $75,000 | .59 | $11,195,250 |
| 500 | $200,000 | .54 | $54,000,000 |
| TOTAL AUTHORIZED EXPENDITURE LEFT UNSPENT DURING A 4-YEAR PERIOD | | | $75,136,975 |
| AVERAGE PER YEAR | | | $18,784,240 |

A more realistic authorized expenditure is possible and would significantly increase competition and further reduce input costs.

## CONCLUSION

The case analysis supports the statistical finding by showing the influence of administrative discretion in the agency's contract award decisions, by explaining several reasons for the incumbents success, by illustrating the lack of

competition for some agency contracts in spite of abundant market competition, and by describing how non-price factors influence the contract awards decisions.

This thesis investigates the distributive effects of a public agency's contract decisions in order to answer the question: "Who wins government contracts and why?". In the thesis, I develop a multivariate regression model to provide an in-depth analysis of the economic and political factors that may influence government officials when they make contract award decisions. I use a general research model to investigate two competing explanations: (1) the policy model where the low-bidder wins the contract or (2) the self-interest model where a politically favored contractor wins the contract. Twenty-one variables measure the influence of the policy model's five economic factors: financial aspects of the firm and contract, low-bid position, price and CPI, competition, and the firm's pricing tactics. Twenty-seven variables measure the influence of the self-interest model's five political factors: ward location, political value of era, change in elected and appointed officials, administrative review time, and contract justification.

The model explains change in contractor, incumbent versus challenger, for a sample of 800 contracts awarded by the Chicago Transit Authority from 1981 to 1992. The period includes four different city of Chicago mayors: Byrne, Washington, Sawyer, and Daley, and the model analyzes the agency's contract decisions during each mayoral term and for three different types of contractors. The model's foundation is developed from several disciplines: government procurement, distributive politics and urban politics, normative expectations of political and bureaucratic actors, and cozy relationships expressed as consensus and conflict among the actors.

I found that political influence was selective rather than systemic, and I found that the following four relationships explained change in contractor: firm size explained 6%; price and market competition explained 38%; administrative discretion explained 8%; and selective economic and political intervention explained up to 20%.