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Government Purchasing and Disadvantaged Business Enterprises: Are Competitive Disparities Being Reduced?

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Abstract

Is the disparity between disadvantaged business enterprises (DBEs) and non-DBEs reduced once a DBE is utilized by a government agency? Presently, disparity studies are used to establish goals for race and sex preference procurement programs by calculating the ratio of available to utilized DBEs. The agency then sets the goal to achieve maximum utilization. However, little assistance is provided to the DBEs once they are utilized by an agency. The presumption of equality between DBE and non-DBE prime contractors is accepted once a DBE is awarded a government contract. This study examines the disparity between DBEs and non-DBEs that are in competition for an agency's contracts and found that non-DBEs still have four distinctive competitive advantages when competing with utilized DBEs.

Key words: Disadvantaged business enterprises, procurement preference programs, preference purchasing policies

This study examines the effects of preference purchasing policies (i.e., race and gender) by measuring the disparity that may persist after a minority-owned or women-owned firm is utilized by an agency. The firms included in this study are defined by the Federal Transportation Administration as disadvantaged business enterprises (DBEs).[1] DBE procurement programs have been controversial since their inception, and numerous court cases have challenged their viability.[2] The bellwether case is the *Croson* decision that declared the City of Richmond's minority business program unconstitutional and was the first to apply the strict scrutiny standard to state and local minority set-aside programs (Gray and Peery, 1990; Ward, 1994; Hairston, 1989; Benjamin, 1989). In this 1989 case, the Supreme Court inflicted a potentially lethal blow to state and municipal set-aside programs

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that contain race-conscious remedies or racial preferences (Hoogland & McGlothlen, 1989). Separately, in *Adarand Constructors, Inc. v. Pena*, the Supreme Court said that the strict scrutiny standard also applied to all federal minority set-aside programs.

As a result of the *Croson* and *Adarand* decisions, governments at the federal, state, and local levels needed to justify their DBE participation policy with a disparity study to establish whether significant differences existed between the number of available and utilized DBEs. Based on the disparity study, a DBE participation policy could then be established by the agency to correct the disparity by bringing DBEs into competitive parity with non-DBEs.

Current participation policy is based on a de facto assumption of equality between DBE and non-DBE contractors once a DBE has succeeded in winning a government contract. The public also accepts this presumption of equality, and relatively little assistance is provided to the DBE once awarded a contract. This study attempts to answer the following question: Is the competitive disparity between DBEs and non-DBEs reduced once an agency awards a contract to a DBE? This study uses five economic factors to explain the disparity in performance between DBEs and non-DBEs in competition for government contracts.

Literature Review

The study of race and sex preference purchasing policies can be considered from two perspectives. The first of these reviews the disparity studies promulgated as the result of the *Croson* and *Adarand* cases in order to meet the "strict scrutiny" standard set by the Supreme Court. This review found studies that showed a disparity in the competitiveness between DBEs and non-DBEs is present in the market, but the review also found reports that challenged these studies. The second perspective reviews government contracting and management studies that differentiate DBEs from non-DBEs. This review provides some insights as to the conditions that may cause the disparity between DBEs and non-DBEs.

Disparity Studies

As a result of the *Croson* and *Adarand* cases, many governments commissioned disparity studies to ensure that their DBE policies met the court's "strict scrutiny" standard in order to support race-conscious remedies. These studies searched for evidence that discrimination caused a significant underutilization of minority businesses. Several disparity studies found that a statistical disparity between the utilization and availability of DBEs did exist in the market. In the Massachusetts Water Resources Authority study, evidence was reported "... of pervasive and ongoing discrimination against minorities and women and businesses owned by minorities and women in the geographic market and industries from which MWRA procures goods and services." (National Economic Research Associates, 1990). The *Dade County Public School Disparity Study* reported "... significant disparity

between the availability of minority firms in the relevant market and their utilization by DCPS gives rise to an inference of discrimination" (Miller & Associates, 1990). The City of New York study reported that "M/WBEs received a substantially smaller share of the dollars spent . . . than we would expect given the availability of M/WBEs in the geographic market and industries from which the City procures goods and services" (Evans, 1992). The Cook County study reported ". . . substantial evidence of pervasive, historical discrimination against M/WBEs in the Chicago area economy. . . These barriers have contributed substantially to the historical underutilization of M/WBEs by the County" (Abram & Zuehl, 1993).

In spite of these and other similar studies, DBE programs remain controversial. There are those who continue to question the validity of the disparity studies while others question the effectiveness of using race and gender as the basis for improving the competitiveness of DBEs.

Skepticism with disparity studies is reflected in the conclusions drawn by LaNoue (1993): "[I]t was obvious that if a company wanted to make a regular business of disparity studies, it could not produce conclusions that would invalidate major parts of existing programs. In this area, you were only as good as the political reception given your last study." Economist Andrew Brimmer, who claims his purpose is to "help municipalities defend affirmative-action programs," generated concern when he told the *Wall Street Journal*: "Technically, it is not difficult at all . . . . It comes down to the will and the resources"(Barrett & Frisby, 1995). Numerous court cases have also been based on the belief that economists have manipulated several factors to arrive at the preordained result. Examples include *Contractors Association v. City of Philadelphia* (1993) and *Associated General Contractors of California* (1995). LaNoue (1993) concludes, "[M]ost [disparity studies] have sought only to justify the [DBE] program of their jurisdictional paymaster by scraping together and magnifying every piece of data that point to discriminating without applying any of the conventional social-science tests to determine validity."

The heart of the controversy between using race and gender as a basis for granting preferential treatment rather than seeking race-neutral civil rights programs is succinctly stated in a suit over the City of Chicago DBE goals (Getzendanner, 1990):

> The City has established a program setting quotas for work reserved for MBE/WBEs through a system of mandatory subcontracting obligations, rather than establishing a program whereby qualified MBE/WBEs and non-minority contractors compete on the merits of the respective bids. The race, ethnicity and gender of an individual bears no rational relationship to an individual's willingness, qualification and ability to engage in constructive contracting with the City.

Are "mandatory subcontracting obligations" the principal way to decrease the disparity between DBE and non-DBE firms versus establishing a program whereby qualified MBE/WBEs and non-DBE contractors compete on the merits of their respective bids? Justice O'Connor, in her opinion in the *Croson* case, said that governments should recognize the benefits of race-neutral policies: "Simplification of bidding procedures, relaxation of bonding requirements, training and financial aid for disadvantaged entrepreneurs of all races would open the public contract market to all those who have suffered the effect of past societal discrimination or neglect" (*City of Richmond v. Croson*, 1989).

Management and Business Performance

In an attempt to explain why the playing field is not level for DBEs, several studies have examined the barriers to winning government contracts. These studies address the problems with government contracting, the differences between buyers and sellers, and key management and financial factors that distinguish DBE from non-DBE firms.

Black (1982) reported that selling to the government can become a traumatic experience which could result in financial losses, because government contracting laws and regulations are a complex maze from which small businesses are not exempt. He states, "Ignorance is not bliss when it comes to contracting with the federal government. Failure to stay informed can prove to be legally and financially disastrous." Cantor (1989) surveyed small businesses to identify the owners' perceived barriers to participation in the government market. He reported the following:

> . . . problems encountered in securing and completing federal work are different from those encountered when doing private sector work. Regardless of the size of the firm, businesses reported that doing work for the federal government was more costly than doing work for the private sector due to (1) higher costs in making proposals, (2) higher costs of producing goods and services, and (3) less profitability from revenues.

Davis (1990) studied the effect of legislation on DBEs' ability to secure new or additional government contracts or subcontracts, and he found that the set-aside provision of the Small Business Act legislation had significantly helped DBEs secure new or additional government contracts, but he found some weakness or dissatisfaction with other laws and their implementation. The General Accounting Office (Federal Register, 1997) found that competition for Department of Transportation-assisted contracts have been concentrated in a few specialty areas that require relatively little capitalization. Non-DBEs complained that they are denied contracting opportunities in the few specialty areas because of the number of DBEs obtaining subcontracts for the specialty work. Conversely, DBEs express concern that it is difficult for them to expand and diversify.

Several authors have examined the interaction between the buyer and seller to describe how this interaction may promote or prohibit the development of contracting opportunities with DBEs. Dollinger, Enz, and Daily (1991) used a transaction costs framework to analyze race and sex preference purchasing programs, and they recommended that companies should shift transaction costs away from purchasing personnel to specialists and that companies should adopt multiple criteria for evaluating DBE programs as well as experiment with innovative programs to maximize purchasers' and DBE resources. Giunipero (1980) studied DBEs performance from the purchasing agent's perspective, and found that purchasers perceived greater problems when contracting from DBEs as compared to non-DBEs. Pearson, Fawcett, and Cooper (1993) examined the impediments and approaches to buyer/supplier relationships between Fortune 500 firms that have corporate minority purchasing programs and their DBE suppliers, and they found that corporate purchasers and DBEs are slowly reducing the barriers to successful contracting relationships.

A number of researchers have used various management and financial factors to compare DBEs and non-DBEs, and found distinctive differences as well as some similarities. Dollinger, Enz, and Daily (1991) studied the value orientations of DBE firms and found that DBE owners placed greater emphasis on six value orientations: collectivism, rationality, materialism, duty, novelty, and power. Scott (1983) compared the financial performance of mature and financially viable DBE and non-DBE firms and found that DBE firms had virtually the same financial performance in terms of profitability, indebtedness, and liquidity as non-DBEs. Bates and Furino (1985) matched pools of similar DBEs and non-DBEs to determine the viability of minority firms in non-traditional lines of business. Their study found that DBEs in fields other than retailing earned higher returns on business net worth than non-DBEs, that DBEs were in a high leverage position and therefore exposed to greater vulnerability to business fluctuation, and that DBEs' net worth and liquidity are the most predictive variables in distinguishing profitable from unprofitable DBEs. Dimeo (1992) provides an excellent summary of the arguments for and against race-conscious programs in the post-*Croson* period noting that no trend regarding the support or demise of minority-preference purchasing policies had yet emerged during the early 90's.

The Study

Possible differences between DBEs and non-DBEs in competition for government contracts were examined with regard to five sets of economic factors: financial, low-bid position, price and consumer price index change, competition, and the firm's pricing tactics. The government agency under study is the Chicago Transit Authority and its annual-order contracts issued from 1982 to 1991.[3] The agency set its DBE participation goal at 30 per cent during the study period. This period

included four mayoral terms: Jane Byrne (1979–1983), Harold Washington (1983–1987), Eugene Sawyer (1987–1989), and Richard M. Daley (1989–1992).

Sample Selection

The sample is drawn from the population of overmoney,[4] annual-order or commodity contracts.[5] The agency competitively bid an average of 209 annual-order contracts, and these contracts represent nine commodities purchased by the agency. The sample of contracts used for this analysis includes 166 different annual-orders and 800 contracting events.[6] This sample represents approximately 20% of all over-money, competitively bid annual-order contracts issued by the agency during the ten-year period under study.[7] The sample was divided into two general pools of firms: one general pool included only firms certified by the agency as a disadvantaged business enterprise (DBE) in accordance with FTA regulations and all other firms which are not classified as a DBE (non-DBE). Table 1 provides the distribution of contracts between DBEs and non-DBEs and shows that the agency awarded 18.4% of its contracts to DBEs ranging from 0% in 1982 to 30.8% in 1991. The data in Table 1 also indicate that an increased number of contracts were being won by fewer DBEs, which suggests that the agency's DBE policy is developing a small pool of very successful DBEs that are more likely to reduce contract opportunities for other DBEs rather than non-DBEs. The concentration of contracts in the hands of few contractors can be seen in the last four columns of Table 1. DBEs are comparable with non-DBEs, with an average of 2.39 contracts/firms versus 2.46. For DBEs, 45.9% of all contracts were awarded to firms having 2 or more contracts, while only 28.2% of the total contracts awarded to non-DBEs were won by firms with 2 or more contracts.

In addition to the two general pools of contractors, DBE and non-DBE contractors, this study includes the following four subordinate pools of successful contractors:

1. DBEs which win contracts as the incumbent contractor,
2. DBEs which win contracts as the challenging firm,
3. Non-DBEs which win contracts as the incumbent contractor, and
4. Non-DBEs which win contracts as the challenging firm.

All pools include only those firms which have won an annual-order contract with the agency. Therefore, these pools allow us to test the accuracy of the public's perception that the disparity among the pools of potential government contractors is reduced once a firm wins a government contract. If the public's perception is correct, this study will find no difference when comparing the pools of DBEs and non-DBEs.

Research Design: A Multiple Regression Policy Model

A multivariate logit regression model is the principal method used to explain the disparity between change in DBEs versus change in non-DBEs who are in competition for an agency's contracts (see Table 2). We shall refer to this as the

Table 1: Contracts Awarded To DBEs And Non-DBEs

Year	Contracts Awarded				Firms With 2 Or More Contracts			
					DBEs		Non-DBEs	
	Total	DBEs	Non-DBEs	% to DBEs	No. of Firms	No. of Contracts	No. of Firms	No. of Contracts
1982	12	0	12	0%	0	0	0	0
1983	48	3	45	6.3%	0	0	3	8
1984	76	4	72	5.3%	0	0	10	22
1985	68	2	66	2.9%	0	0	6	15
1986	99	12	87	12.1%	1	4	13	29
1987	70	10	60	14.3%	1	2	7	15
1988	101	26	75	25.7%	3	7	7	21
1989	132	36	96	27.3%	14	23	11	35
1990	95	25	70	26.3%	4	15	10	37
1991	91	28	63	30.8%	5	16	7	20
Total	792	146	646		28	67	74	182
Average Percentage to DBEs				18.4%				
		Average contracts per firm				2.69		2.46
Percentage of total number of contracts						45.9%		28.2%

"policy model", because it measures whether the public good is being sought by the agency through its effort to seek low-cost goods and services. The foundation for the policy model is change, and it measures the response variable simultaneously with change in all the explanatory variables. The response variable, change in contractor, is binary due to the phenomenon being measured. In government contracting, there

Table 2: Policy Model: Five Economic Factors That Explain Change In Contractor

$$Pr(WIN = 0) = B_0 + B_1FIN + B_2 LOW + B_3PRICE + B_4COM + B_5TACT + U$$

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)].
And
FIN = Financial Aspects Factor,
LOW = Low-Bid Position Factor,
PRICE = Price and CPI Change Factor,
COM = Competition Factor,
TACT = Contractor's Pricing Tactics Factor,
B_0 = Intercept,
B_1, B_2, B_3, B_4, B_5 = Coefficients, and
U = The unexplained variance

are only two mutually exclusive possible outcomes from every competitive bid event: the incumbent contractor wins or does not win the consecutive annual-order contract. A total of 13 explanatory variables are included to measure the five major economic factors believed to impact on these outcomes. The hypothesized relationships between the explanatory variables and the response variable are described in Table 3.

As noted, the response variable is change in contractor. The unit of measure is the firm, and a dummy variable was created to identify whether the same firm or a different firm wins the annual-order contract. The logit analysis models the response variable to explain the probability that the incumbent wins a consecutive annual-order contract, i.e., Pr(WIN=0). 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).

Turning to the explanatory variables, two financial variables were included: annual sales to the agency during the year of contract award and the authorized contract expenditure. Both financial variables are measured in actual (non-inflation adjusted) dollars during the year of contract award. To measure if the successful contractor was also the low bidder, two measures were employed: low-bidder and

Table 3: Policy Model Factors That Explain Change In Contractor With Hypotheses

Explanatory Variables	Response Variable Hypothesis
1. Financial Factors	
Annual Sales to the Agency (V7) Authorized Contract Expenditure (V28)	Incumbent's or non-DBE's probability of winning increases as his/her sales increase and decreases as the contract values increase.
2. Low-Bid Position Factor	
Low-Bidder (V9)	Incumbent's or non-DBE's probability of winning increases when they submit the lowest overall bid price
Percentage-Low-Bidder (V10)	Incumbent's or non-DBE's probability of winning increases as the margin between low and second-low bidder increases.
3. Price and CPI Change Factor	
Contract Price Change (V24) Absolute Value of contract Price Change (V24A) Consumer Price Index (CPI) (V33)	Incumbent's or non-DBE's probability of winning decreases as change in contract prices, CPI, and contract price variance increase.
4. Competition Factor	
Number of Firms Solicited (V11) Number of Firms Responding (V12) Number of Firms Bidding (V13)	Incumbent's or non-DBE's probability of winning decreases as competition increases.
5. Contractor's Pricing Tactics Factor	
Fixed-Bid-Price (V27) Term-of-payment (V26)	Incumbent's or non-DBE's probability of winning increases when favorable pricing terms and conditions are offered.
Percent Discount for Early Payment (V52)	Incumbent's or non-DBE's probability of winning increases as the percentage discount for early payment increases.

percentage-low-bidder. The low-bidder variable measures if the successful contractor was also the one who submitted the lowest-overall bid price. The percentage difference between the successful bidder and the next lowest bidder measures the actual percentage difference between the two bidders' proposed price. The price and CPI change factor was concerned with price changes between consecutive annual-order contracts in order to determine the degree of price competition for the agency's contracts. Three variables are used to measure price change: actual and absolute value of the price change between consecutive annual-order contracts and change in the consumer price index. With regard to the competition factor, three variables were used: the number of firms solicited, the number of firms responding to the bid solicitation, and the number of firms submitting a bid price. The firm's pricing tactics were also measured in three ways: the firm's offer of a fixed or escalated price, the firm's offer of payment terms for early payment of an invoice, and the firm's offer of a percent discount for early payment of an invoice.

Results

Response Variable

The sample includes 149 and 649 contracts awarded to DBEs and non-DBEs, respectively. The 18.4% of the contracts awarded to DBEs represent 15.6% of the total estimated dollar value of contracts awarded. DBEs were awarded contracts valued at $12.9 million while non-DBEs received contracts with a total value of $70.2 million. These findings suggest that the agency was not successful in attaining its 30% participation goal for annual-order contracts during the study period. However, the data in Table 1 indicate the agency did achieve its goal during the final year of the study period.

Explanatory Variables

Table 4 categorizes the variables by DBE and non-DBE and reports the minimum and maximum values for each variable. Five noteworthy patterns emerge from this data:

1. The range of dollar values for both sales to the agency and contract value is the same for both DBEs and non-DBEs.
2. DBEs and non-DBEs demonstrated a similar willingness to significantly underprice the competition by offering prices that were up to 76% or 99%, respectively, lower than the next lowest bidder in order to win the contract.
3. Both DBEs and non-DBEs varied their prices over a wide range. Non-DBEs varied their prices over the widest range, −92% to +99%. While DBEs also varied their prices considerably, −41% to 55%, the range was smaller than non-DBEs. This finding suggests that successful contractors can be aggressive in their competitive pricing strategy rather than being conservative and simply underbidding the competition by only 1% or 2%.

4. The study period included both stable economic times as well as periods of run-away inflation where the CPI increased to 16.3%.
5. The amount of competition for a contract varied over a wide range: from no competition up to 42 firms solicited by the agency, 18 firms responding, and 14 firms submitting a bid price.

The last four points indicate that the sample includes firms that are willing to engage in significant price competition during volatile as well as stable economic times and under competitive conditions.

Pool Comparison

The findings in Table 5 suggest that there is very little difference between DBEs regardless of whether they win a contract as an incumbent or a challenger. Alternatively, the data in Table 6 indicate a significant difference between non-DBEs depending on whether they win a contract as an incumbent or a challenger.

The pool comparison reveals that competition is the only factor that differentiated both the DBE and non-DBE incumbents from challengers, and in both cases the incumbents faced less competition than the challenger. On the other hand, all five policy model factors differentiated non-DBE incumbents from non-DBE challengers, as illustrated in Table 6. Non-DBE incumbents have greater aggregate sales to the agency and win larger contracts; incumbents win contracts by offering a price that is 14.4% lower than the next lowest bidder whereas the challenger is only 9.73% lower than the next lowest bidder for the same commodity. However, incumbents win a consecutive annual-order contract at prices that are 2.31% higher than the current contract price while challengers must undercut current contract prices by 2.64%, a difference of approximately 5%. Non-DBE incumbents win contracts over non-DBE challengers when the agency solicits fewer firms, receives fewer bid responses, and receives fewer bid prices. Incumbents generally offered firm prices for the duration of the contract, but were less likely to offer a discount for early payment of an invoice whereas the non-DBE challenger was more likely to offer escalated prices and to offer a discount for early payment of an invoice.

Non-DBE incumbents maintain a clear competitive advantage over non-DBE challengers whereas DBE incumbents & challengers are more evenly matched. This finding may partially explain why the ratio of DBE incumbents to DBE challengers at 0.28 is significantly less than the ratio of non-DBE incumbents to non-DBE challengers at 1.17.

The DBE vs. non-DBE comparison in Table 7 reveals that all five policy model factors explain the difference between the two general pools. Non-DBEs have greater aggregate sales to the agency and win larger contracts than DBEs. Non-DBEs win contracts as the lowest overall bidder while the DBEs were more likely to win as other-than-low bidder. Non-DBEs underbid the next lowest bidder by 9.12% whereas DBEs had to underbid the next lowest bidder by 12.16%. Unexpectedly, change in the contract price did not differentiate between the two general pools of contractors suggesting that the agency did not realize any net price advantage or

Table 4: Summary Of Policy Model Variables

Variable Name and Number	DBE Firms			Non-DBE Firms		
	No. of Events	Min. Value	Max. Value	No. Of Events	Min. Value	Max. Value
Annual Sales to the Agency (V7)	145	$0	$1 million	644	$0	$1 million
Authorized Contract Expenditure (V28)	147	$3,000	$1 million	649	$3,000	$1 million
Low or Other-Than-Low Bidder (V9*)	148	0 = other	1 = low bidder	639	0 = other	1 = low bidder
Percent-Low-Bid (V10)	139	0%	76%	559	0%	99%
Contract Price Change (V24)	144	−41%	55%	517	−92%	99%
Absolute Value of % Price Change (V24A)	144	0.0%	55%	517	0.0%	99%
Consumer Price Index (V33)	146	0.9%	16.2%	648	0.0%	16.3%
No. of Firms Solicited (V11)	149	3	30	646	1.0	42
No. of Firms Responding (V12)	149	1	14	645	1.0	18
No. of Firms Bidding (V13)	146	1	14	641	1	14
Firm or Escalated Price (V27*)	147	0 = escalated price	1 = firm price	649	0 = escalated price	1 = firm price
Discount offered for Early Payment (V26*)	147	0 = no discount	1 = discount	649	0 = no discount	1 = discount
% Discount for Early Payment (V52)		0.0%	15.0%	649	0.0%	30.0%

*Binary Variables.

Table 5: Incumbent And Challenging DBE Firms

Variable Name and Number	Incumbent Contractors n = 33		Challenging Firms n = 116		Wilcoxon Rank Sum
	Mean	SD	Mean	SD	
Financial Factor					
Annual Sales to the Agency (V7)	$205,060	$274,960	$182,740	$275,360	.6341
Authorized Contract Expenditure (V28)	$80,940	$119,940	$88,480	$145,040	.7764
Low Bidder Factor					
Low or Other-Than-Low Bidder (V9*)	0.50	0.50	0.53	0.50	.7982
Percent-Low-Bid (V10)	14.39%	18.94%	7.79%	9.74%	.4225
Price Factor					
Contract Price Change (V24)	3.88%	12.76%	1.12%	13.38%	.5411
Absolute Value of Percent Price Change (V24A)	7.63%	10.87%	9.10%	9.84%	.1548
Consumer Price Index (V33)	6.03%	2.71%	5.79%	2.78%	.5538
Competition Factor					
No. of Firms Solicited (V11)	13.88	4.37	15.08	5.37	.2792
No. of Firms Responding (V12)	4.55	2.22	6.31	2.56	.0003
No. of Firms Bidding (V13)	3.73	1.82	5.34	2.31	.0002
Price Tactics Factor					
Firm or Escalated Price (V27*)	.87	.033	.94	.024	.2603
Discount Offered for Early Payment (V26*)	0.67	0.48	0.69	0.46	.7770
% Discount for early payment (V52)	.94%	1.10%	1.64%	2.63%	.2365

*Binary Variables.

Table 6: Incumbent And Challenging Non-DBE Firms

Variable Name and Number	Incumbent Contractors n = 347		Challenging Firms n = 296		Wilcoxon Rank Sum
	Mean	SD	Mean	SD	
Financial Factor					
Annual Sales to the Agency (V7)	$280,800	$342,830	$265,980	$358,660	.0345
Authorized Contract Expenditure (V28)	$119,950	$164,200	$97,250	$152,220	.0271
Low Bidder Factor					
Low or Other-Than-Low Bidder (V9*)	0.89	0.32	0.85	0.37	.1234
Percent-Low-Bid (V10)	14.40%	17.66%	9.73%	11.03%	.0042
Price Factor					
Contract Price Change (V24)	2.31%	10.38%	−2.64%	17.57%	.0001
Absolute Value of Percent Price Change (V24A)	6.45%	8.44%	11.35%	13.65%	.0001
Consumer Price Index (V33)	4.46%	2.66%	4.46%	3.06%	.4194
Competition Factor					
No. of Firms Solicited (V11)	12.25	4.76	13.77	5.29	.0004
No. of Firms Responding (V12)	4.88	2.59	5.85	2.60	.0001
No. of Firms Bidding (V13)	3.64	2.05	4.61	2.39	.0001
Price Tactics Factor					
Firm or Escalated Price (V27*)	.94	0.23	.87	0.34	.0009
Discount Offered for Early Payment (V26*)	0.52	0.50	0.61	0.49	.0235
% Discount for Early Payment (V52)	1.25%	2.60%	1.27%	2.06%	.1278

*Binary Variables.

disadvantage from competition between DBEs and non-DBEs. However, CPI did differentiate non-DBEs from DBEs, and the finding indicates that DBEs generally won contracts during an inflationary period when prices and/or costs changed rapidly and often unpredictably while non-DBEs generally won contracts during more stable economic times. All three variables used to measure competition differentiated DBEs from non-DBEs with the latter facing slightly less competition at all levels. Finally, only one of the three variables used to measure various price tactics differentiated the two general pools. DBEs are more likely to offer a discount for early payment of an invoice.

Logit Analysis

Results for the logit analysis explaining differences between the incumbent and challenger for DBEs and non-DBEs can be found in Table 8,[8] columns (A) and (B), respectively, while the difference between DBEs and non-DBEs is reported in column (C).[9] Three factors indicate that DBE incumbents are most likely to win a consecutive contract: (a) when they are able to significantly underbid DBE challengers, (b) when there is very little variance in the contract price from year to year, and (c) when the agency receives few bid prices. Conversely, DBE challengers win by a narrow price margin during inflationary times and in a more competitive market. The DBE challenger's success may be directly related to the agency's DBE participation policy which encourages the utilization of DBEs that provides little or no support to DBE incumbents.

The logit analysis reveals that non-DBE incumbents enjoy a distinctive competitive advantage over non-DBE challengers.[10] As summarized below, all five policy model factors explain the circumstances under which non-DBE incumbents win consecutive contracts:

1. Non-DBE incumbents face less competition, because the agency solicits fewer firms and fewer firms decide to submit a bid.
2. Non-DBE incumbents win larger contracts contrary to the hypothesized relationship which posits that incumbents are more likely to lose large contracts due to increased competition for those contracts.
3. Non-DBE incumbents significantly underbid their non-DBE competitors by an average of 4.7%. This competitive pricing advantage could result from the incumbent's insider knowledge, fear of losing the contract, and/or knowledge of market prices.
4. Non-DBE incumbents win as the lowest overall bidder, but win with contract prices that average approximately 2.31% higher than the previous contract prices while non-DBE challengers are more likely to win as other-than-low bidder and at contract price by 2.64% less than the previous contract price. This price difference may partially explain why the non-

Table 7: DBE Firms Versus Non-DBE Firms

Variable Name and Number	Incumbent Contractors n = 149		Challenging Firms n = 649		Wilcoxon Rank Sum
	Mean	SD	Mean	SD	
Financial Factor					
Annual Sales to the Agency (V7)	$187,820	$274,480	$276,040	$351,390	.0004
Authorized Contract Expenditure (V28)	$86,790	$139,440	$108,100	$157,760	.0473
Low Bidder Factor					
Low or Other-Than-Low Bidder (V9*)	0.52	0.50	0.87	0.34	.0001
Percent-Low-Bid (V10)	9.12%	12.37%	12.16%	15.04%	.0057
Price Factor					
Contract Price Change (V24)	1.75%	13.25%	−0.25%	14.57%	.2284
Absolute Value of Percent Price Change (V24A)	8.76%	10.06%	8.81%	11.61%	.4395
Consumer Price Index (V33)	5.77%	2.76%	4.47%	2.84%	.0001
Competition Factor					
No. of Firms Solicited (V11)	14.81	5.17	12.92	5.06	.0001
No. of Firms Responding (V12)	5.92	2.59	5.31	2.63	.0068
No. of Firms Bidding (V13)	4.98	2.30	4.08	2.26	.0001
Price Tactics Factor					
Firm or Escalated Price (V27*)	1.92	0.26	1.91	0.29	.5131
Discount Offered for Early Payment (V26*)	0.69	0.46	0.58	0.50	.0041
% Discount for Early Payment (V52)	1.49%	2.34%	1.26%	2.35%	.1211

*Binary Variables.

Table 8: Incumbent And Challenging Non-DBE Firms

Variable Name and Number	Column (A) DBE FIRMS: Incumbent vs. Challengers		Column (B) NON-DBE FIRMS: Incumbent vs. Challengers		Column (C) DBE FIRMS VS. NON-DBE FIRMS	
	Coefficient	p-value	Coefficient	p-Value	Coefficient	p-Value
Financial Factor						
Annual Sales to the Agency (V7)	0.000802	.4032	0.000363	.2255	−0.00162	.0001
Authorized Contract Expenditure (V28)	−1.00110	.5652	0.00174	.0106	−0.00121	.1529
Low Bidder Factor						
Low or Other-Than-Low Bidder (V9*)	−0.4654	.4191	0.7127	.0229	−1.7622	.0001
Percent-Low-Bid (V10)	0.0605	.0121	0.0384	.0001	−0.0193	.0352
Price Factor						
Contract Price Change (V24)	0.0454	.1739	0.0435	.0001	−0.00081	.9243
Absolute Value of Percent Price Change (V24A)	−0.0942	.0284	−0.0683	.0001	−0.00523	.6336
Consumer Price Index (V33)	−0.0147	.1779	−0.00323	.4027	0.0187	.0001
Competition Factor						
No. of Firms Solicited (V11)	0.0364	.5207	−0.0639	.0070	0.0356	.1438
No. of Firms Bidding (V13)	−0.4554	.0096	−0.1260	.0205	0.0804	.1487
Price Tactics Factor						
Firm or Escalated Price (V27*)	−0.6962	.4190	0.9220	.0078	0.6070	.1460
Discount Offered for Early Payment (V26*)	0.8290	.2675	−0.3194	.1689	0.3369	.1987
% Discount for Early Payment (V52)	−0.0435	.1004	0.00343	.4958	0.00234	.6030
Intercept	2.6774	.1722	−0.7317	.3689	−2.5928	.0064

*Binary Variables.

Table 9: Circumstances Under which DBEs are Most and Least Likely to Win a Consecutive Annual-Order Contract

Variable Number	66.5% Chance of Winning a Consecutive Annual-order Contract	6.1% Chance of Winning a Consecutive Annual-order Contract
V7	$19,000 annual sales to the agency	$347,000 annual sales to the agency
V9	Other-than-low bidder	Lowest overall bidder
V10	2% below the next-lowest bidder	14% below the next-lowest bidder
V33	6.1% increase in CPI	2.5% increase in CPI

DBE incumbent can offer firm contract prices for the duration of the annual contract.

5. Non-DBE incumbents are more likely to win consequent contracts under stable contract prices when there is a very small or no price change between one contract year and the next.

Significant differences in the circumstances under which DBE's are most and least likely to win consecutive annual-order contracts are presented in Table 9. Specifically, the circumstances under which DBEs have a 66.5% chance of winning a contract and the circumstances under which DBEs have only a 6.1% chance of winning a contract are summarized. The logit analysis reveals that DBE contractors are still at a competitive disadvantage with non-DBEs after winning a government contract.[11] DBEs generally lose contracts to non-DBEs with higher aggregate sales to the agency which means non-DBEs are more likely to win either bigger contracts or more contracts. DBEs are more likely to win contracts as other-than-low bidder which infers that the agency's enforcement of its DBE policy and its 10% differential policy may cause the rejection of a lower price from a non-DBE bidder in full compliance with the bid documents.[12] DBEs win contracts by underbidding the competition by only a narrow margin which suggest that DBEs do not have a significant pricing advantage like non-DBEs which are able to significantly under bid the competition. In addition, DBEs are more likely to win during inflationary times when both markets input costs and output prices vary greatly and may seriously erode or endanger profits while non-DBEs are more likely to win under stable market conditions when costs and profits are more predictable.

Summary and Conclusions

This study measured the effectiveness of a race-conscious and gender-conscious DBE policy to create a pool of DBEs which can compete with non-DBEs and found that DBEs did not achieve competitive parity over a 10-year period. DBEs still faced several competitive disadvantages. First, size still mattered. DBEs are less likely to win against non-DBEs with higher aggregate sales. Second, DBEs are less likely to win commodity contracts as the lowest overall bidder which suggests that non-DBEs, rather than DBEs, are the lowest cost producers. Third, DBEs win contracts by a narrow margin whereas non-DBEs undercut the competitor's price by a large margin. This finding also supports the perception that non-DBEs are the efficient and low-cost producers. Fourth, DBEs experience their greatest success during uncertain economic times. In one respect, this relationship can be viewed as a strength, because DBEs appear willing to seek contracts under adverse economic conditions. On the other hand, it increases risk and presents a threat to the DBEs' long-term survival.

Results from the logit analysis indicated that DBE incumbents had only a slight advantage over DBE challengers, but a frequency analysis showed that a high percentage of contracts were being concentrated with fewer DBEs by the end of the study period. This finding suggests that DBE challengers started to encounter more intense competition from their peers, the DBE incumbent, during the late 1980's. If the trend continues and the DBE ratio of 0.28 incumbent/challenger increases to the non-DBE ratio of 1.17 incumbent/challenger, the present DBE program will not be effective in enlarging the pool of successful DBEs. The DBE challenger, emerging DBE, will find government contract opportunities only in new markets not previously sought by DBEs or in present opportunities voluntarily vacated by DBE incumbents.

This study also makes it is clear that an effective DBE policy must include management assistance to DBEs if they are to overcome the competitive disparity with non-DBEs. The findings confirm several management problems facing DBEs as identified by other researchers. Cantor's (1989) conclusion that DBEs make less profit is confirmed by the data presented in Table 7. DBEs make approximately $100,000 less in sales to the agency than non-DBEs. This difference reduces DBE's ability to finance growth from profits and forces DBEs to seek debt financing. This financial situation helps to explain GAO's finding that DBEs are "concentrated in a few specialty areas which require little capitalization." And Bates and Furino's (1985) concerns about the high leverage position of DBEs exposing them to greater vulnerability would certainly apply to those DBEs who seek to increase their capital investment through debt financing, because DBEs achieve their greatest success during inflationary times when both interest rates and business risk are highest making them more vulnerable to unexpected economic events.

The dichotomy between disparity before and after contract award may be partially caused by the present DBE policy which posits that DBEs attain a

competitive parity with non-DBEs as the disparity between number of available and utilized DBEs is reduced. This study did not confirm that presumption. The agency's success in increasing the number of bidding opportunities as well as the number of successful DBEs did not bring DBEs into full competitive parity with non-DBEs. In fact, the policy appears to create a new disparity: A disparity between the DBE incumbent and DBE challenger. Success in developing a large pool of DBE will not be achieved by simply enforcing the policy that DBEs ". . . shall have the maximum opportunity to compete for and perform contracts. . ." (Chicago transit Authority, 1993) and then limit post-contract award activity to a set of reporting requirements to ensure that the DBE participation did occur as promised in the bid documents. This approach will not open viable economic opportunities for either the nascent minority entrepreneur or the emerging DBE in order to increase the pool of economically viable DBEs. Instead, a race-neutral, management-assistant approach is needed to achieve the FTA's objectives to create significant opportunities for DBEs to participate in DOT-assisted contracts, and to assist the development of firms that can compete successfully in the marketplace outside of the DBE program (Federal Register, 1997).

The findings suggest that DBEs should not be treated as a homogeneous population. Future research should describe the dynamics of the birth, growth, and maturity of women- and minority-owned businesses to determine the best structure for an effective DBE program so the program can ". . . remedy past and current discrimination against disadvantaged business enterprises, ensure a level playing field and foster equal opportunity in DOT-assisted contracts, improve the flexibility and efficiency of the DBE program, and reduce burdens on small businesses" (Federal Register, 1999).

Future research should examine nascent women and minority entrepreneurs, start-up DBEs, small DBEs, and large DBEs; compare the pools of DBEs with and without government contracts; explore the differences between DBEs as prime contractors and DBEs as subcontractors; study the pool of unsuccessful certified DBEs with the pool of successful certified DBEs as well as understand the differences between DBEs who consistently win government contracts with DBEs who win only one or two contracts; and find the reasons why some DBEs successfully compete in markets outside the DBE program market while other DBEs fails to do so. And for those DBEs who fail, researchers need to find the best combination of race-specific and race-neutral tools to help those DBEs diversify.

When comparing DBEs with non-DBEs, researchers must compare similar industries, locations, and capacities in order to explain the differences between DBEs and non-DBEs as consistent winners, DBEs and non-DBEs as occasional winners, and certified unsuccessful DBEs and unsuccessful non-DBEs on an agency's bidders list. Researchers must account for any differences in perception and goals regarding economic opportunity, networking, relationship building, and strategic decision making. In addition, researchers need to examine the procurement

process itself to determine whether the process is biased to favor the non-DBE or whether the process is implemented by value-neutral bureaucrats who strictly follow policy. For instance, do purchasing officials exercise as much discretion as is allowed by the agency's DBE officials in their contract decisions? The officials' use of their discretion is critical if we accept the presumption that DBE programs are resource-intensive and resource-constraint. How effectively do agency officials use their discretion to assist DBEs and to "level the playing field?" Finally, accurate data to analyze DBE programs are both scarce and costly, and as researchers, we must concern ourselves with the availability and reliability of data.

A broader research framework will also help researchers be more inclusive when studying the "disadvantaged" business which the latest FTA ruling states that it can include white males: "Of course, this program doesn't just help women and minorities. It extends a helping hand to firms owned by white males, as well. They can be certified to [participate] if they prove that they have been disadvantaged" (Federal Register, 1999, p. 5099). Secretary Slater and Attorney General Reno made the following statement regarding the possibility of a white-male owned firm being certified as a DBE.

> Any individual owning a business may demonstrate that he is socially and economically disadvantaged, even if that individual is not a woman or a minority. Both the current and proposed regulations provide detailed guidance to recipients to assist them in making individual determinations of disadvantaged status. And, in fact, businesses owned by white males have qualified for DBE status. (Federal Register, 1999, p. 5099).

In addition, researchers must continue to ask why there is a persistent "glass ceiling" for both women- and minority-owned businesses. Senator Lautenberg believes that long-standing relationships keep women and minorities from succeeding: "This is an industry (construction industry) that relies heavily on business friendships and relationships established decades, sometimes generations ago, years before minority-owned firms were even allowed to compete." (Federal Register, 1999, p. 5101). If we accept that the "glass ceiling" and "relationship established decades, sometimes generations, ago" directly affect the success of DBEs, then we must broaden our research framework to include the dynamics of business development over time rather than just the stages of business development.

Future research needs a broader framework for two principal reasons: (1) to ensure that agencies will not "overtreat" one segment of the DBE population, because overtreatment can cause an inequity equal in magnitude to the inequity the DBE policy is trying to correct, and (2) to help agencies meet the new challenges created by recent changes in DBE policy which give agencies greater discretion in the design and implementation of their DBE programs.

Endnotes

1. DBE procurement programs have their roots in the Small Business Act of 1963 and subsequent federal acts such as Titles VI and VII of the Civil Rights Act of 1964 and Executive Orders 11246, 11375, and 11478. DBE procurement programs hold the promise of providing equal business opportunity for all persons regardless of race, color, creed, national origin, or sex.

2. Several notable court cases include *Fullilove v. Klutznick*, 448 U.S. 448 (1980); *Wygant v. Jackson Board of Education*, 476 U.S. 267 (1986); *City of Richmond v. J. A. Croson Co.*, 109 S. CT. 706 (1989); *Metro Broadcasting Inc. V. Federal Communications Commission*, 110 S.Ct. 2997 (1990); *Cone v. Hillsborough County*, 11th Cir. 89–3976, August 1990.

3. Chicago Transit Authority operates the second largest public transportation system in North America and serves the City of Chicago and 37 surrounding suburbs. It is a large purchaser of goods and services for bus and rail car parts, repair and maintenance services, construction, and other supplies and services normally required by any large corporation. During the study period, the CTA had approximately 13,000 employees, an operating budget of over $800 million, and a capital budget of $300 million. In 1977, CTA initiated a policy to utilize disadvantaged businesses. The scope of this study examines the performance of DBE and non-DBE firms during a ten-year period from 1982 to 1991. This ten-year period includes the mayoral terms of four different mayors for the City of Chicago. CTA's policy is to maximize the contracting opportunities for minority- and women-owned businesses in accordance with the FTA regulations and its Transit Board. The author believes that this study is a fair representation of the effects of FTA's DBE policy, because CTA has strictly followed and enforced FTA regulations during the study period. In particular, the agency works to maximize the DBEs' opportunity to compete for contracts and to ensure compliance at time of bid opening, but limits post-contract award intervention to reporting requirements in accordance with FTA regulation. The agency did not provide any technical, financial, marketing, or management assistance to any DBE after award of contract.

4. "Overmoney" means the contract's dollar value exceeds $5,000.

5. 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.

6. The agency seeks competitive bids for the annual-order contracts on a yearly basis. 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.

7. For an in-depth discussion of the policy model, and all contracts executed by the agency during the study period and an in-depth explanation of the basis for sample selection, see my dissertation, *Economic, Political, and Bureaucratic Factors Influencing a Public Agency's Contract Decisions*. My dissertation identifies the commodities included in the sample and provides a detailed listing of the contracts included in the sample.

8. Correlation analysis was performed to identify highly correlated variables that should be eliminated from the logit analysis to reduce multicollinearity. Only two variables are moderately correlated: V12, number of firms responding to the bid solicitation, and V13, the number of firms submitting a bid price. Due to the higher interpretative value of V13, V12 will be dropped from the logit analysis.

9. The following is an explanation of a positive coefficient in Table 8.

- Annual Sales to the Agency Variable. A positive coefficient indicates that the incumbents or DBEs' probability of winning a consecutive annual-order contract increases as their total annual sales to the agency increases while successful challengers or non-DBEs have low annual sales to the agency.
- Authorized Contract Expenditure Variable. A positive coefficient indicates that the incumbents or DBEs' probability of winning a consecutive annual-order contract increases as the authorized contract expenditure increases while the challengers or non-DBEs' probability of winning decreases as the contract's dollar value increase.
- Other-than-low Bidder Variable. A positive coefficient indicates that the incumbents or DBEs' probability of winning a contract increases if they are the lowest overall bidder while the challengers or non-DBEs win by submitting an other-than-low bid.
- Percent Low-Bid Variable. A positive coefficient indicates that the incumbents' or DBEs' probability of winning a contract increases as the price difference between their bid price and the next lowest bidder increases.
- Percent Price Change Variable. A positive coefficient indicates that the incumbents' or DBEs' probability of winning a contract increases when the prices between consecutive annual-order contracts increase.
- Absolute Value of Percent Change Between Annual-order Prices Variable. A positive coefficient indicates that the incumbents' or DBEs' probability of winning a contract is greatest when the absolute difference between contract prices is largest.
- Consumer Price Index Variable. A positive coefficient indicates that the incumbents' or DBEs' probability of winning a consecutive annual-order contract is greatest when the inflation rate is highest.
- Competition Factor. A positive coefficient indicates that incumbents or DBEs are more likely to win a contract when the agency solicits bids from more firms, receives more responses, or receives more bid prices.
- Firm Price Variable. A positive coefficient indicates that the incumbents' or DBEs' probability of winning a consecutive annual-order contract increases when they submit a firm bid price.
- Discount Offered for Early Payment Variable. A positive coefficient indicates that the incumbents' or DBEs' probability of winning a consecutive annual-order contract increases when they offer a discount for early payment of an invoice.
- Percent Discount for Early Payment Variable. A positive coefficient indicates that the incumbents' or DBEs probability of winning a consecutive annual-order contract increases as the percent of discount offered by the firms increases.

10. The logit probability reported in Table 8 was converted to express the probability of a DBE winning a contract rather than a non-DBE. While the hypotheses shown in Table 3 are presented from the non-DBE perspective, this study considers the attributes of the incumbent contractor to be similar to the attributes of a non-DBE contractor when compared to a DBE contractor. The conversion was done in Table 8 to facilitate the discussion of DBEs' opportunities and probability for success rather than the non-DBEs'.

11. Logit probability is the estimated logit of the probability of the incumbent winning a consecutive annual-order contract, the probability is calculated as shown in *SAS/STAT User Guide* (p. 1076).

12. The agency used a 10% differential rule that allowed the lowest overall bidder to be rejected if the firm failed to meet the DBE participation goal and allowed the agency to pay up to 10% more for the product or service.

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