

Representative Bureaucracy and Federal Procurement: Examining the Impact of Minority Representation
on the Awarding of Contracts to Small Disadvantaged Businesses

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ABSTRACT

A considerable body of research in public administration and management examines the link between passive demographic representation in bureaucracies and the actual decisions made by bureaucrats that reflect the values and beliefs of the represented group, thereby benefiting the group as a whole. This form of direct representation - or active representation as it is referred to in the literature - is the foundation for a viable theory of representative bureaucracy. The empirical evidence testing the link between passive minority representation and active representation has been somewhat consistent. Active representation occurs when bureaucrats possess discretion in decision making and when the policy output is salient to the represented minority group. In this paper, we extend the theory of representative bureaucracy to federal procurement. Specifically, we examine the contract award decisions of 63 agencies over a three year period. We find that increased minority representation in senior executive positions results in an increased proportion of federal contracts awarded to minority owned businesses.

Reconciling the bureaucracy with the values of American democracy is a central concern for public administration scholars. As Dwight Waldo (1952) surmised, “How can a theory that embraces the hierarchical and authoritarian nature of bureaucracy be reconciled with the seemingly contradictory egalitarian and ultimately inefficient values of democracy?” (p. 102). In recent decades, scholars have proposed a theoretical framework to square such apparent inconsistencies. Beginning with Kingsley (1944), and developed more fully by Levitan (1946) and Mosher (1982), the theory of representative bureaucracy has been an important contribution to the field of bureaucratic politics. Generally speaking, the theory holds that if bureaucracy is representative of the population it serves, it will be more politically responsive and less of a threat to the values of democracy (Meier and Nigro 1976; Meier 1993; Selden 1997; Selden, Brudney, and Kellough 1998). The mechanism underpinning the theory relies on linking passive representation, or simple representativeness, to active representation -- policy outputs that benefit those segments of society represented within the bureaucracy. To make such a link possible, public administrators and managers must possess considerable discretion in policy decisions (Sowa and Selden 2003).

Most American scholars have moved beyond Kingsley’s (1944) initial conceptualization of representation by social class in the British Civil Service, and instead conceptualized representativeness in terms of demographic composition. As a result, representative bureaucracy has been fertile ground for empirical researchers over the past three decades. While early theorists focused on the positive aspects of representativeness and its symbolic importance to citizens, much of the recent empirical research has focused on linking minority representation to active representation (Selden 1997; Meier and Stewart 1992; Hinderer 1993). The link between passive and active representation based on gender has received less attention and the findings

have been more mixed when compared to race; however, recent empirical findings suggest that in certain institutional environments women will use their discretion to actively represent other women in the field of education (see Keiser et al. 2002).

The consistency of the empirical work examining the relationship between representativeness and policy outputs has been encouraging, yet the scope of analysis has been relatively limited when compared to other research programs. Indeed, much of the extant empirical evidence comes from the field of education. In this paper we seek to broaden this scope by examining the link between passive and active representation in the awarding of federal contracts to small disadvantaged businesses, which are minority owned small businesses. Specifically, we test – and find support – for the proposition that federal agencies with more demographically representative leadership will award a larger percentage of contracts to small disadvantaged businesses. Given the importance of business ownership to the vitality of minority communities, and the extent of federal contracting in contemporary American governance, we believe that this finding has important implications for public managers and policy analysts alike.

The paper proceeds as follows. First, we provide a general review of the representative bureaucracy literature, focusing primarily on previous empirical research linking passive and active representation. Second, we extend the theoretical framework to include public sector contracting due to its importance in the new governance, and follow this discussion with a brief overview of federal contracting with small disadvantaged businesses. Third, we use federal contracting data to test our hypothesis that increased minority representation in agency leadership positions will result in a greater percentage of contracts awarded to small disadvantaged businesses. Finally, we discuss the implications of this finding.

The Theory of Representative Bureaucracy

Bureaucracy in the American context presents government scholars with an intellectual challenge. On the one hand, the need for extensive bureaucracy to implement and oversee public policies and programs is evident, yet on the other hand, bureaucrats – unlike politicians – are unelected officials with less direct lines of accountability to voters. The attempts of some scholars to rationalize the role of the bureaucracy within the policy process as being somehow distinct from politics, and therefore immune to political influence, have typically been dismissed as unrealistic and lacking empirical support. As Waldo (1952) noted, “any theory of administration, has to be a theory of politics.” Many scholars have instead sought to understand role of politics as it relates to bureaucracy. Accordingly, the broad field of bureaucratic politics has become fertile ground for research in public administration (see Frederickson and Smith 2003; Meier and Bohte, 2006). The theory of representative bureaucracy is part of this larger research tradition.

The fundamental premise of representative bureaucracy is that if the bureaucracy adequately represents the values and interests of the public it services, then it can be reconciled with the political reality of the policy process. The original idea – generally credited to Kingsley (1944) – was based on integrating different strata of social class into the British Civil Service. Early work in the American context instead focused on how demographic diversity – race, ethnicity, and gender – of the individuals working for government agencies can add legitimacy to bureaucratic actions (Long 1952; Van Riper 1958). Krislov (1974) argued that diversity in the workforce acts to link the values and beliefs of the citizenry and the bureaucracy through socialization. The mechanism underpinning the theory is that bureaucrats and other members of

an ethnic group undergo a similar socialization experience that results in similar attitudes about public policy. Because bureaucrats are assumed to rationally maximize their individual policy preferences, their decisions should be more responsive to the overall preferences of their ethnic group. Put differently, an infusion of diversity may alter the pervasive beliefs and values of an agency on the whole and therefore render the agency more in tune with the citizenry it serves.

Much of the recent literature on representative bureaucracy aims to understand when the passive representative (described above) leads to active representation – actual policy outputs that benefit citizens who are passively represented (Selden 1997). There is a considerable body of empirical research examining this link – particularly the link between minority representation and policy outputs benefiting minority citizens and communities (Meier and Stewart 1992; Meier 1993; Selden 1997). In general, scholars agree that active representation ensues when bureaucrats have considerable discretion in decision making, and when the issue is “salient to the demographic group in question” (Keiser et al. 2002: p. 556; Thompson 1976).

Education has proved to be a particularly vibrant field for examining the propositions of representative bureaucracy. In practical terms, education is an appealing policy area due to the prevalence of standardized testing in public schools, a situation which allows scholars to assess the relative performance of different demographic groups. Much of the research has centered on whether the representativeness of teachers has resulted in improved performance by the corresponding minority group – the assumption being that minority teachers are better able to relate to minority students and thus more effective at conveying the curriculum to minority students. Meier (1993), for example, found that a higher percentage of Latino teachers in Florida schools resulted in improved performance by Latino students on standardized tests (see also

Meier and Stewart 1992 for a study of African American students). In a more recent study, Pitts (2007) found that racial diversity led to improved *overall* performance of public schools in Texas.

The empirical literature is not limited to education, however. In a widely cited study of the Farmers Home Administration, Selden (1997) found that passive minority representation (regional offices filled with a larger percentage of ethnic minorities) led to active representation in the form of an increased likelihood to award grant loans to minority applicants. What is more, the study suggests that agency socialization processes do not moderate the role of demographic background in influencing an individual's values and beliefs. Indeed, Selden argues that some minority individuals perceived their role at the agency to include advocacy for minority rights.

Others have argued that agency socialization processes tend to replace the inclination toward active representation with agency driven norms and values over time. Indeed, Thompson (1976) asserted that minorities achieving high level jobs within an agency may be less likely than street level bureaucrats to engage in any form of active representation due to the amount of time (corresponding to increased socialization) needed to ascend to such positions. In an empirical test of Henderson's hypothesis, Meier (1993) found support for the hypothesis in that an increased percentage of Latino principals in Florida schools had no effect on the performance of Latino students. Similarly, Pitts (2007) found that passive representation of teachers was more strongly associated with active representation (minority performance) when compared to "managerial representation."

In many ways, our study is a subsequent test of Thompson's hypothesis in a field outside of education. Our focus is on minority representation (African-American, Hispanic, Asian

American, Native American, and overall representation) in senior executive positions in federal agencies. We measure demographic representation at this level because professional and agency socialization should be strongest – as Thompson suggests – countering the effects of socialization derived from social origin. We argue that a positive relationship between minority representation in senior executive positions and the level of contracting with small disadvantaged businesses constitutes a more difficult test of representative bureaucracy. Moreover, our study helps clarify the role of diversity – especially in leadership positions – in *shaping* an organization’s shared beliefs, values, and priorities.

Representative Bureaucracy and the Contracting State

Examining federal procurement under the lens of representative bureaucracy is a novel approach with important implications for a wide range of stakeholders in society. Not only has the scale of federal contracting increased in recent decades, but the scope goods and services contracted out has expanded as well (Light 1999). In their recent *New York Times* article, “In Washington, Contractors Take on Biggest Role Ever,” Scott Shane and Ron Nixon (2007) describe the federal government’s increased reliance on private contractors for public service delivery. They assert that the ever expanding pool of nongovernmental contractors constitutes a virtual fourth branch of government where contracting expenditures have virtually doubled between 2000 and 2007 – from \$207 billion to nearly \$400 billion. Whether such an expansion in contracting is warranted and/or appropriate is fodder for current and future debate, but is not relevant here. What is important is that more and more contracting dollars are available to businesses and nonprofit organizations each year. How these contracts are awarded – and more importantly – to whom, is the focus of our study.

As discussed in the introduction, there is consensus that active representation will likely occur when individuals from the demographic group possess considerable discretion, and when the policy output is salient to the demographic group in question. Our belief is that federal contracts constitute the potential for a direct transfer of resources from the federal government to a small minority owned business. One of the perceived challenges facing minority communities is establishing and nurturing a thriving business sector with minority owned businesses that can compete in the marketplace.

Given the open-market economic system in place in the U.S., business ownership is often equated with economic as well as political power. Not surprisingly, lawmakers have recognized the need for developing small, historically disadvantaged businesses. Indeed, two programs have been established to help minorities and other disadvantaged groups compete for federal contracting dollars. In the following section we discuss these programs in turn.

Small Disadvantaged Businesses and Federal Contracting

The Small Business Administration (SBA) administers two programs to assist small businesses owned or controlled by members of socially and economically disadvantaged groups: the Small Disadvantaged Business (SDB) Certification Program and the Section 8(a) Program. The SDB Certification Program pertains strictly to benefits offered by the federal government to small disadvantaged businesses competing for federal contracts. The Section 8(a) Program is a business development program that provides a broader scope of assistance to socially and economically disadvantaged firms, including procurement set-asides for Section 8(a) eligible firms. All firms eligible under Section 8(a) automatically qualify for SDB certification. SBA

representatives in federal agencies and the heads of procurement departments in these agencies work cooperatively to implement these two programs.

The Small Disadvantaged Business Certification Program

To qualify for the SDB Certification Program, a firm must be at least 51% owned and controlled by a socially and economically disadvantaged individual or individuals, including African Americans, Hispanic Americans, Asian Pacific Americans, Subcontinent Asian Americans, and Native Americans. Other individuals can also qualify if they can show a “preponderance of evidence” that they are disadvantaged. In addition, owners of the firms must have a net worth of less than \$750,000, excluding the equity of the business and primary residence, and the firm must meet the standard for size of small businesses in their industry. Qualifying firms can participate in the program for a maximum of three years.

From October 1998 through December 2004, the SDB Certification Program offered two benefits to qualifying small disadvantaged businesses competing for federal contracts: the price evaluation adjustment (PEA), and the evaluation factor or sub-factor. The PEA is a 10% price benefit given to qualifying firms bidding as prime contractors on procurements when there was a competitive acquisition over the simplified acquisition threshold of \$100,000 and where the 3-digit NAICS subsector for the prime contract was one in which the Department of Commerce has authorized the use of this benefit (Federal Acquisition Regulation Subpart 19.11).ⁱ There were several exceptions to the use of the PEA by federal agencies, including acquisitions for which price was not a selection factor; acquisitions in which all fair and reasonable offers were accepted; and acquisitions in which the use of PEA would have caused the award to be made at a price exceeding the fair market price by more than 10%. In addition the PEA could not be used in noncompetitive acquisitions, especially set-aside acquisitions for small businesses, HUBZone

small businesses, service disabled veteran-owned small businesses, and Section 8(a) qualifying small disadvantaged businesses. A change in policy occurred in December 2004, when the Small Business Reauthorization and Manufacturing Assistance Act of 2004 was revised to deny federal civilian agencies the authority to use the PEA. Later in 2005, the Department of Defense amended the Federal Acquisition Regulations to cancel use of the PEA in that department.

The second benefit offered to small disadvantaged businesses qualifying for the SDB Certification Program is the evaluation factor or sub-factor. Effective January 1, 1999, federal procurement regulations have authorized agencies to grant qualified prime contractors a credit when proposing to use small disadvantaged businesses as subcontractors (FAR Subpart 19.12). This credit, known as the evaluation factor or sub-factor, is given to all types of firms serving as prime contractors, including small disadvantages businesses. The contracting officer for the agency has discretion in how much weight to apply to proposed participation by small disadvantaged businesses. The general rule is for the contracting officer in a federal agency to award the highest points to the prime contractor with the most dollars targeted to small disadvantaged businesses in the authorized 3-digit NAICS subsectors.ⁱⁱ The evaluation factor applies only to competitive negotiated acquisitions over \$500,000, or \$1,000,000 in construction. Exceptions to the use of the evaluation factor include sealed bidding; small business and Section 8(a) set-aside acquisitions; contracts performed entirely outside the United States; and negotiated acquisitions where the “lowest price, technically acceptable” source selection process is used. Prior to 2005, small disadvantaged businesses bidding as prime contractors were allowed to select this benefit instead of the PEA; they could not receive both.ⁱⁱⁱ

Section 8(a) Program

The Small Business Act, Public Law 85-536, as amended, authorizes the Section 8(a) Program, which is administered by the Small Business Administration (SBA). The Section 8(a) Program is a business development program created to help small disadvantaged businesses compete in the market place and gain access to federal and private procurement opportunities. To be eligible for the 8(a) Program, a firm must be a small business with at least 51% ownership by a socially and economically disadvantaged individual or individuals; it must have been in business for at least two years; and it must demonstrate a reasonable prospect for success. In addition, owners of the firms must have a net worth of less than \$250,000, excluding the equity of the business and primary residence, and the firm must meet the standard for size of small businesses in their industry. Qualifying small disadvantaged businesses can participate in the program for up to nine years.

Under the Section 8(a) Program, the SBA provides business development support to qualifying small disadvantaged businesses, including mentoring; procurement assistance; business counseling; training; financial assistance; surety bonding; and other management and technical assistance. In addition, Section 8(a) authorizes the SBA to enter into contracts with federal agencies and then subcontract the work to small disadvantaged businesses eligible under Section 8(a)^{iv}. According to the FAR Subpart 19.8, SBA staff and agency procurement officials are to work cooperatively to identify agency acquisitions that will be set-aside for Section 8(a) businesses. The SBA may ask an agency to conduct a broad search for acquisition opportunities for a specific Section 8(a) qualified firm, or it may identify a specific acquisition requirement in an agency and ask the agency to offer the acquisition to a particular Section 8(a) firm. Moreover, agency procurement officials can and often do initiate the process themselves by

identifying an acquisition requirement and then either offering it directly to a particular Section 8(a) firm on a sole source basis or setting the acquisition requirement aside for competition among Section 8(a) firms. Agency procurement officials can award contracts to 8(a) firms without competition (i.e., on a sole source basis) for acquisitions above the simplified acquisition threshold (usually \$100,000) and either below \$5.5 million for manufacturing or below \$3.5 million for nonmanufacturing industry codes. Acquisitions above the threshold must be set-aside for competition among Section 8(a) firms. The competitive threshold can be waived by SBA's Associate Administrator for the Section 8(a) Program if agency procurement officials can justify that there is not a reasonable expectation that at least two Section 8(a) firms will compete for the contract.

Agency procurement officials exercise broad discretion in identifying acquisition requirements that will be set aside for Section 8(a) firms, even though all acquisitions offered to the SBA and Section 8(a) qualified firms must be approved by the SBA. Also, as a general rule, the SBA will accept an agency's recommendation for a particular Section 8(a) contractor (FAR 19.804-3). Since 1998, the SBA, through a series of memoranda of understanding, has granted federal agencies additional discretion to contract directly with 8(a) firms. These memoranda delegate contract execution responsibility to the agencies and require them to monitor certain requirements of the contracts. However, before final awarding of contracts, agencies must seek and receive final approval from the relevant SBA district office. This increased authority, particularly in regards to the awarding of sole source contracts to Section 8(a) eligible firms, offers agencies considerable flexibility to streamline the acquisition process and establish long-term relationships with Section 8(a) firms (Staresina, 2005).

Public Procurement and Administrative Discretion

Active representation is more likely to occur in policy areas where public managers are granted a significant amount of administrative discretion. Today, federal procurement policy, enshrined in the Federal Acquisition Regulations (FAR), has become highly formalized. Despite the abundance of rules and regulations that federal officials must follow to procure goods and services, however, ample opportunities for the exercise of administrative discretion remain. In this section, we will discuss the various points in the procurement process at which minorities in federal agencies can exercise discretion to award contracts for small disadvantaged businesses.

Procurement of goods and services under the Section 8(a) Program appears to create the greatest opportunity for active representation to occur. This program grants federal officials broad discretion in setting aside certain acquisitions for small disadvantaged businesses eligible under Section 8(a). Agency officials can procure goods and services under this program on a sole source basis or by setting aside the acquisition for competition among small disadvantaged businesses. Either type of acquisition—sole source or competitive among Section 8(a) firms—ensures that the contract will be awarded to a small disadvantaged business. Although the final awarding of a contract to a Section 8(a) eligible firm must be approved by the SBA, federal acquisition regulations state that as a general rule, the SBA will accept the agency's recommendation for a contract award under the Section 8(a) program. In addition, since 1998, the SBA has granted additional discretion to agencies to contract directly with small disadvantaged businesses participating in the Section 8(a) program.

Federal acquisitions that are competitively bid and not set aside under the Section 8(a) Program or any other federal set-aside program (e.g., the small business set-aside program) limit administrative discretion in the awarding of contracts to small disadvantaged businesses. Due

to rampant corruption and abuse in the awarding of contracts, governments in the late 1800s began to reform the procurement process with the introduction of competitive sealed bidding aimed at enhancing fairness and impartiality in the procurement arena (Cooper, 2003). Today, the use of competitive sealed bidding is widespread among American governments. Competitive sealed bidding limits administrative discretion by requiring public managers to evaluate bids on the basis of price, a highly objective decision criterion. Bids are submitted in a sealed envelope and opened at a preannounced public gathering. This procurement method, however, still allows federal officials to exercise some discretion in making the final determination about contract award. The winning firm must not only offer the lowest price but must also be deemed responsive and responsible by federal officials. A responsive bid is one that complies in all respects with the invitation to bid, including being complete; in the correct format; without errors; and submitted on time (FAR Subpart 14.3). Responsible bids are those that demonstrate that the bidder has the capacity to perform the work requested by the agency (FAR Subpart 9.1). A responsible bid demonstrates that the provider has the technology, production capacity, and human and financial resources to perform the work satisfactorily and that it has integrity, experience, and a good reputation. Federal officials also have the authority to cancel the acquisition altogether or disqualify a firm that offers an unreasonable price. In short, federal regulations regarding competitive sealed bids still requires a reasonable amount of judgment and discretion on the part of federal officials, allowing for active representation to occur.

In an effort to achieve “best value” in procurement of goods and services, federal agencies are employing competitive proposals with increasing frequency. Competitive proposals is a procurement method requiring firms to submit proposals, including a technical proposal for meeting the federal agency’s requirements. Proposals are assessed in terms of a range of

evaluation criteria, including price but also past performance, technical excellence, management capability, personnel qualifications and prior experience (FAR Part 15). By considering these other criteria, this approach aims at balancing the federal government's need for goods and services that are of high quality and reasonably priced. Evaluating a technical proposal often involves considerable administrative discretion and judgment on the part of federal officials, especially as the levels of technical complexity and uncertainty surrounding an acquisition increase. Aspects of quality, such as past performance, technical excellence, and management capacity, can be ambiguous and difficult to measure. Indeed, governments tend to solicit proposals from firms when their acquisition requirements lack specificity (Reh fuss, 1989; ICMA, 1992). In many instances, public managers issue request for proposals when they are able to specify the contractor's objectives but lack knowledge of the means by which these objectives are to be achieved. The administrative discretion that is involved in the evaluation of many technical proposals, therefore, creates significant opportunities for active representation to occur in the awarding of federal contracts.

Data and Measures

For our empirical analysis, we use federal level data obtained from various sources. Contract awards data used to measure our dependent variables were gathered from the Federal Procurement Data System. Our independent and control variables are measured using data collected by the U.S. Office of Personnel Management (OPM) and Office of Federal Procurement Policy (OFPP). We use pooled cross-sectional data ($n = 150$). The unit of analysis is the federal agency. Our observations include nearly all cabinet-level departments and most of the larger independent agencies in the federal bureaucracy.

Dependent variables

We measure our dependent variables, *SDB business* and *S8a business*, as the proportion of an agency's contracts that are awarded to firms participating in the SDB Certification program or the Section 8(a) program. We include individual agency observations from the years 2004, 2005, and 2006.¹ Our independent variables are measured using data from the year prior to the year of dependent variable. In doing so, we are better able to establish a cause and effect relationship.

Representation

We measure representation in two ways. First, the *minority representation* variable is constructed by computing the percentage of minority individuals in senior executive leadership positions for each agency. The logic of using percentages – as opposed to the total number of minorities – is to enable us to make reasonable comparisons between agencies. Second, in order to test the impact of individual minority groups, we disaggregate the minority representation variable into individual minority group variables. Specifically, we include the percentages of *African Americans*, *Hispanics*, *Native Americans*, and *Asians* in senior executive leadership positions for each agency. While our analysis is not focused directly on gender representation, there is reason to believe that agencies with a larger percentage of women in leadership positions may be more likely to contract with socially and economically disadvantaged business. Accordingly, we include the variable *female*, which is the percentage of females in senior executive leadership positions for each agency.

¹ Of the 63 agencies included in the analysis, 30 agencies have observations for all three years; we have data for 2005 and 2006 for 27 agencies; and 2006 data for 5 agencies.

Controls

In addition to representation variables, we add a series of control variables primarily to account for the differences between the agencies included in the analysis. First, we include two variables, *total budget* and *total employees*, to account for the size differences between the agencies. In addition to the *total budget* variable, we include a *discretionary budget* variable to account for the level of funds which have not previously been earmarked for another purpose. The primary purpose of including the *discretionary budget* variable is to ascertain how much flexibility the agency has in its budgetary allocation.

We include three variables to capture some of the variation in institutional environment between the agencies. First, it is possible that procurement decisions for cabinet-level agencies may be more highly scrutinized when compared to non-cabinet agencies due to their relative closeness to the executive. Depending on the priorities of the administration in power, however, cabinet-level secretaries may emphasize or deemphasize contracting with socially and economically disadvantaged businesses. To account for this possibility, we include the dichotomous measure, *cabinet* (1=cabinet-level agency). Second, some agencies in the data set have an office overseeing the small disadvantaged business program within the agency. It is reasonable to assume that agencies with a SDB office will be more likely to recognize, as well as prioritize, opportunities to contract with small disadvantaged businesses. To account for this possibility, we include the dichotomous variable, *office* (presence of an SDB office = 1). Third, we include the *goal* variable to control for the different goals each agency sets for contracting

with small disadvantaged businesses.² Presumably, those agencies that set higher initial goals will be more likely – in general – to contract with SDB and Section 8(a) businesses.

Lastly, we included dichotomous measures for the year of the dependent variable observation in an effort to limit the potential for serial correlation. Specifically we include the variables *2004* and *2005* and therefore omit 2006 to be used as the basis for comparison (see Table 1).

[Insert Table 1 about here]

Model and Methodology

The empirical specification for our analysis is relatively straightforward. We are testing the impact of minority representation in leadership positions on the level of contracting with SDB and S8(a) businesses in federal agencies. More formally:

$$SDBPROP = \beta_{01} + \beta_{11}REP + \beta_{21}\overline{CONT} + \epsilon \quad (1)$$

$$S8aPROP = \beta_{02} + \beta_{12}REP + \beta_{22}\overline{CONT} + \epsilon \quad (2)$$

Where,

SDBPROP and S8aPROP are the proportions of an agency’s total contracts awarded to SDB businesses and S8(a) business, respectively; REP is the percentage of minorities in leadership positions for each agency in the year prior to the contract awards; and CONT is a vector of control variables from the year prior to the contract awards. Since each program has its own rules and implementation system, the programs are modeled separately. In addition to testing the

² There are actually two goal variables – SDB goal and S8a goal – depending on the program.

overall impact of minority representation, we test the individual impact of each minority group. A weakness of this approach is that we are unable to disaggregate the proportion of contracts awarded to individual minority groups. Therefore, we are unable to make direct comparisons between individual minority group representation and the proportion of contracts awarded to businesses owned by that particular minority group.

The dependent variables used in this analysis are the proportions of contracts awarded to firms qualifying for the SDB Certification and Section 8(a) programs. Researchers often utilize ordinary least squares (OLS) regression to estimate the effect of covariates on proportions (see Paolino 2001). The problem with such an approach is that proportions violate several of the assumptions underlying OLS. First, proportions are not normally distributed because they are not defined over the domain of the normal distribution. Second, because proportions are observed on a closed interval, the conditional expectations function is nonlinear. Third, the variance will be heteroskedastic due to the bounded nature of the interval (Kieschnick and McCullough 2003; Paolino 2001). Finally, and perhaps most importantly, OLS regression is likely to predict values outside the (0, 1) interval – an occurrence similar to the linear probability model for binary data.

To correct for these violations, some researchers have transformed the dependent variable using a log-odds ratio:

$$\ln \left[\frac{Y}{(1-Y)} \right] \quad (3)$$

The utility of the log-odds ratio is that it can take on a real value as the dependent variable varies between 0 and 1. As such, linear estimation – like OLS – makes sense. One drawback of the approach described by (1), however, is that log-odds transformation is not possible when the

observed value of y takes on either of the boundary points, 0 or 1. Therefore it is necessary to make an adjustment to these observed values prior to transforming the dependent variable.

Since some of the observations for our dependent variables are zeros, we are less inclined to follow the traditional log-odds ratio transformation. A different solution is to follow Papke and Wooldridge (1996) who suggest quasi-maximum likelihood estimation using a fractional logit technique. The utility of the fractional logit technique is that all of the predicted values of y fall in the interval (0, 1). Moreover, the observed values 0 and 1 are included in the analysis without having to adjust the observations prior to estimation, a situation which often leads to clumsy post estimation interpretations. In practical terms, the fractional logit is estimated by using a generalized linear model (family – binomial, link – logit). The estimation is based on the following functional form:

$$E(y|X) = G(X\beta) = \frac{\exp(X\beta)}{[1+\exp(X\beta)]} \quad (4)$$

Where,

G is a function that ensures that all of the predicted values lie within the expected interval (0, 1).

We rely on this technique as our primary for of analysis, but also include OLS estimations as a basis for comparison and interpretation.

Results

Table 2 presents the results of the fractional logit estimation using GLM. Regressions 1 and 2 illustrate that the effect of the *minority* representation variable, as expected, is positive and statistically significant in both equations (at the $p < 0.10$ level in the S8a model). Surprisingly,

the *female* variable is statistically significant and *negative* in each of the regressions – suggesting the increased female representation reduces the likelihood that an organization will contract with a SDB or an S8a firm. When looking at individual minority groups, the *African American* variable (see table 2 – regressions 3 and 4) is statistically significant and positive for the SDB program, but we are unable to reject the hypothesis of no relationship when looking at the S8a program. The most consistent finding throughout our analysis of the individual minority groups is that *Hispanic* representation in senior leadership positions has a positive and highly significant effect on the proportion of contracts to firms in each program. Interestingly, the percentage of Asians in leadership positions has a negative impact on the proportion of contracts going to SDB firms (see table 2 – regressions 7 and 11).

[Insert Table 2 about here]

Turning to the control variables, the *discretionary budget* variable has a positive and statistically significant effect on the proportion of contracts to both programs. This finding suggests that when agencies have more control and flexibility over their budgets, they are more likely to contract with SDB and S8a firms. Similarly, when agencies have a SDB *office* on site, they are more likely to contract with SDB and S8a firms. It may be that these offices are able to more effectively target and inform the agency of contracting opportunities with disadvantaged businesses than when an agency acts alone. As expected, cabinet-level agencies tend to contract more with SDB firms; however, the relationship is less clear when looking at S8a businesses. Table 2 also illustrates that goals influence decisions when contracting with S8a businesses and not SDB businesses. This result is not all that surprising given that agencies are allowed to set

aside contracts for S8a firms, but not SDB firms; therefore it is presumably easier for agencies to adhere to goals for the S8a program.

For comparison, we include the results of the OLS estimation in table 3. The table indicates that the results described above are generally consistent in terms of sign and significance. It is worth noting, however, that the minority representation variable does not achieve statistical significance in the S8a model (table 3- regression 2). From table 3 we are able to glean a rough estimate of the amount of variation explained by each model. In general, the S8a models explain approximately one third of the variation, while the SDB models tend to explain less (18-30 percent).

[Insert Table 3 about here]

Table 4 reports the marginal effects of regressions 1 and 2 from table 2. The model predicts that 9 percent of an agency's contracts will be awarded to SDB firms, and that 2 percent will be awarded to S8a firms -- when holding all of the variables at their means. The marginal effect of a 10 percent increase in minority representation -- holding all other variables at their means -- will result in a 1.4 percent increase in the number of contracts being awarded to SDB businesses, on average. While this is a seemingly small increase, a move from 9 percent to 10.4 percent (9 percent plus the marginal effect of 1.4 percent) is equivalent to roughly a 16 percent change. Moreover, since many agencies award thousands of contracts in any given year, that 1.4 percent increase often represents a substantial number. Since the S8a program represents a much smaller percentage of total contracts, it is more difficult to put our results into context. Based on marginal effects, a 10 percent increase in minority representation will result in a 0.4 increase in the percentage of S8a contracts awarded. Even though increasing the predicted value (2 percent)

by 0.4 represents a sizable change (roughly 20 percent); the scale is so low as to render such a comparison misleading.

[Insert table 4 about here]

Table 5 reports the marginal effects of the individual minority groups. As we have pointed out throughout this paper, a weakness of disaggregating the minority measure is that we are unable to match individual minority group representation with the percentage of contracts awarded to the corresponding minority group. Despite this limitation, we believe it is interesting to see that Hispanic representation has the largest and most consistent effect on the dependent variables. Indeed, a 10 percent increase in Hispanic representation, results in a 6 percent increase SDB contracts and 2.4 percent for S8a contracts – larger marginal effects than the aggregated minority variable reported in table 4. This result suggests that Hispanic representation is driving the overall effect. Indeed, it appears that the negative coefficient for Asian representation is moderating the effect of Hispanic representation to a degree.

[Insert Table 5 about here]

Discussion and Conclusion

In this paper we find evidence that minority representation will affect the amount of contracting with small disadvantaged businesses. This is an important finding given that businesses qualifying for the SDB Certification and Section 8(a) programs are minority owned firms. Accordingly, this paper represents a first test of representative bureaucracy as it relates to federal procurement. We believe that this finding is extremely important given the vast dollars transferred to the private sector via government contracts. In particular, the federal government

contracts nearly \$400 billion to outside contractors. In predominantly minority communities, these federal dollars may help open the door to more business development and activity which could, in turn, have a positive impact on the community as a whole. It is not surprising, therefore, that the federal government has created programs to help minority owned businesses gain a foothold in the federal procurement system.

The primary assumption underlying research on representative bureaucracy – including this study – is that bureaucrats have considerable discretion in their actions. The theory holds when, in this case, minority bureaucrats exercise their discretion to the benefit of individuals of similar minority status. In the flip side of the same general argument, Meier (1993) and others have argued that active representative bureaucracy is less likely in highly institutional environments where managers' hands are tied by rules and regulations. In this study we examine a context that does not fit neatly into either domain. As we have pointed out throughout this paper, bureaucrats do have discretion in awarding contracts, even when using competitive sealed bidding as the solicitation method. Despite this fact, it is also clear that the federal government – in an effort to protect against corruption in contract – has developed a procurement system with limits on subjective judgment by managers (see Cooper 2003).

We believe that by examining the representation of senior executives, we are not only relating minority representation to discretion, but also examining how diversity in leadership helps shape the priorities of individual agencies. In other words, minority leaders may also affect the discretionary actions of street-level bureaucrats beyond their own actions. Previous research has hypothesized that high level managers are socialized by the agency over time and thus lose their willingness or inclination to represent minority groups in the public (Thompson 1976). The

results of this study suggest the opposite – that minority leaders may instead maintain their beliefs and values throughout agency socialization and may even alter the values and priorities of the organization by doing so. Consequently, our research stands in contrast to similar studies in education where the minority representativeness of principals (managerial representation) is less important than the representativeness of teachers (street-level representation) in determining performance of minority students (see Pitts 2007; Meier 1993).

A primary limitation of this study is our inability to disaggregate the proportion of contracts to individual minority groups. Due to our inability to make direct comparisons between the percentage of African American representation, for example, and the number of contracts to African American businesses, we have to rely more heavily on comparing aggregate minority representation to an aggregate measure of the number of contracts awarded to minorities. By doing so, we are implicitly assuming that minority preferences are somewhat homogenous and that one minority community will act in the best interest of another minority community. On its face, this seems like a reasonable assumption; but even a cursory analysis of recent election data tends to disavow this notion. Despite this limitation, we believe that overall minority representation is a useful variable, especially at the senior level. It may be that higher level officials may have no choice but to diffuse their values and beliefs across a broader plane due to the rank of their position. Using discretion to help minority groups, in general, may be the most effect avenue to benefiting their own demographic group due to the more visible and institutionalized environment of the SES.

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Table 1 Descriptive Statistics

	n	Mean	Std. Dev.	Min.	Max.
<u>Dependent Variables</u>					
SDB (proportion of total contracts)	124	0.093	0.083229	0	0.518
S8a (proportion of total contracts)	124	0.031	0.045034	0	0.278
<u>Representation</u>					
Minority (%)	150	14.623	14.864	0	100
African American (%)	150	8.581	11.543	0	100
Hispanic (%)	150	3.144	3.781	0	20
Asian (%)	150	2.244	2.643	0	12.5
Native American (%)	150	0.655	1.799	0	10.87
Women (%)	150	27.142	11.903	0	75
<u>Controls</u>					
Total Employees (1000)	150	32.465	86.763	0.016	664.311
Total Budget (\$1,000,000)	150	36.178	103.675	-1.865	581.456
Discretionary Budget (\$1,000,000)	150	14.264	51.235	-0.8	473.697
Cabinet (cabinet-level agency=1)	150	0.293	0.457	0	1
Office (SDB office within agency=1)	150	0.467	0.501	0	1
SDB Goal (%)	123	5.553	4.782	1	24.56
S8a Goal (%)	123	4.619	3.304	1.23	20
2004	150	0.367	0.484	0	1
2005	150	0.420	0.495	0	1

Table 2 Results of GLM (fractional logit) Estimation

	1	2	3	4	5	6	7	8	9	10	11	12
	SDB	S8a	SDB	S8a	SDB	S8a	SDB	S8a	SDB	S8a	SDB	S8a
<u>Representation</u>												
Minority	0.017 [3.36]**	0.021 [1.81]+										
African American			0.017 [3.37]**	0.017 [1.29]							0.011 [1.99]*	0.01 [0.91]
Hispanic					0.081 [2.95]**	0.157 [3.56]**					0.076 [2.90]**	0.148 [3.64]**
Asian							-0.056 [1.66]+	0.001 [0.02]			-0.075 [2.10]*	0.013 [0.26]
Native American									-0.031 [1.16]	-0.005 [0.16]	-0.011 [0.62]	0.031 [0.99]
Female	-0.009 [1.08]	-0.026 [1.76]+	-0.007 [0.85]	-0.026 [1.61]	-0.024 [2.03]*	-0.05 [3.92]**	-0.016 [1.77]+	-0.032 [2.52]*	-0.015 [1.66]+	-0.032 [2.44]*	-0.018 [1.71]+	-0.049 [3.64]**
<u>Controls</u>												
Total Employees (1000)	-0.06 [3.45]**	-0.075 [2.80]**	-0.006 [3.51]**	-0.008 [2.84]**	-0.007 [3.68]**	-0.009 [3.40]**	-0.008 [3.33]**	-0.009 [2.43]*	-0.007 [3.23]**	-0.009 [2.65]**	-0.073 [3.98]**	-0.089 [3.25]**
Total Budget (\$1,000,000)	-0.001 [4.05]**	-0.002 [4.95]**	-0.001 [4.01]**	-0.003 [4.59]**	-0.001 [3.03]**	-0.002 [4.21]**	-0.001 [3.40]**	-0.003 [4.73]**	-0.002 [3.46]**	-0.003 [4.58]**	-0.001 [2.14]*	-0.002 [3.62]**
Discretionary Budget (\$1,000,000)	0.009 [3.50]**	0.013 [3.51]**	0.009 [3.51]**	0.014 [3.51]**	0.011 [3.58]**	0.015 [3.73]**	0.011 [3.26]**	0.015 [2.89]**	0.011 [3.15]**	0.015 [3.05]**	0.011 [3.98]**	0.015 [3.72]**
Cabinet	0.316 [1.85]+	0.313 [1.44]	0.332 [1.90]+	0.359 [1.63]	0.379 [2.13]*	0.441 [2.27]*	0.399 [2.07]*	0.457 [2.03]*	0.466 [2.26]*	0.461 [1.95]+	0.271 [1.64]	0.377 [1.95]+
Office	0.357 [1.70]+	1.52 [4.84]**	0.373 [1.66]+	1.449 [4.88]**	0.335 [1.81]+	1.66 [4.69]**	0.355 [1.61]	1.256 [5.16]**	0.22 [0.99]	1.259 [5.96]**	0.591 [2.87]**	1.716 [4.18]**
SDB Goal	0.005 [0.23]		0.007 [0.36]		-0.001 [0.05]		0.009 [0.44]		0.013 [0.61]		-0.006 [0.36]	
S8a Goal		0.13 [5.68]**		0.136 [6.17]**		0.079 [3.56]**		0.138 [6.03]**		0.138 [6.50]**		0.083 [3.35]**
2004	-0.135 [0.67]	-0.227 [0.83]	-0.131 [0.64]	-0.212 [0.74]	-0.066 [0.34]	-0.147 [0.58]	-0.072 [0.34]	-0.194 [0.64]	-0.093 [0.43]	-0.193 [0.63]	-0.042 [0.23]	-0.161 [0.66]
2005	-0.149 [0.78]	-0.198 [0.79]	-0.147 [0.75]	-0.205 [0.79]	-0.123 [0.68]	-0.148 [0.64]	-0.134 [0.68]	-0.233 [0.86]	-0.165 [0.81]	-0.231 [0.83]	-0.058 [0.33]	-0.142 [0.62]
Constant	-2.427 [7.35]**	-4.803 [6.77]**	-2.404 [7.39]**	-4.592 [6.52]**	-2.018 [5.41]**	-4.354 [8.26]**	-1.868 [5.37]**	-4.133 [8.44]**	-1.957 [5.81]**	-4.133 [8.84]**	-2.218 [6.07]**	-4.536 [7.50]**
Observations	114	114	114	114	114	114	114	114	114	114	114	114

Robust z statistics in brackets

+ significant at 10%; * significant at 5%; ** significant at 1%

Table 3 Results of OLS Estimation (Dependent variables are percentages)

	1	2	3	4	5	6	7	8	9	10	11	12
	SDB	S8a	SDB	S8a	SDB	S8a	SDB	S8a	SDB	S8a	SDB	S8a
<i>Representation</i>												
Minority	0.185 [2.31]*	0.042 [1.01]										
African American			0.211 [2.48]*	0.041 [0.78]							0.142 [1.69]+	0.018 [0.41]
Hispanic					0.633 [2.04]*	0.221 [1.95]+					0.552 [1.80]+	0.216 [1.82]+
Asian							-0.441 [1.61]	-0.005 [0.04]			-0.642 [2.04]*	-0.113 [0.66]
Native American									-0.321 [1.21]	-0.155 [1.41]	-0.128 [0.64]	-0.069 [0.58]
Female	-0.063 [0.78]	-0.029 [0.96]	-0.046 [0.60]	-0.027 [0.87]	-0.14 [1.60]	-0.051 [2.13]*	-0.108 [1.47]	-0.039 [1.81]+	-0.105 [1.39]	-0.039 [1.79]+	-0.1 [1.20]	-0.046 [1.49]
<i>Controls</i>												
Total Employees (1000)	-0.053 [2.80]**	-0.027 [2.22]*	-0.053 [2.85]**	-0.028 [2.25]*	-0.062 [2.93]**	-0.03 [2.21]*	-0.066 [2.74]**	-0.029 [1.98]+	-0.06 [2.72]**	-0.029 [2.11]*	-0.064 [3.03]**	-0.03 [2.18]*
Total Budget (\$1,000,000)	-0.013 [3.13]**	-0.01 [3.55]**	-0.013 [3.17]**	-0.01 [3.51]**	-0.012 [2.62]*	-0.009 [3.47]**	-0.012 [2.87]**	-0.01 [3.80]**	-0.014 [2.80]**	-0.01 [3.36]**	-0.009 [2.33]*	-0.009 [3.53]**
Discretionary Budget (\$1,000,000)	0.083 [2.82]**	0.05 [2.54]*	0.084 [2.84]**	0.05 [2.55]*	0.092 [2.85]**	0.051 [2.50]*	0.098 [2.68]**	0.052 [2.30]*	0.089 [2.66]**	0.051 [2.41]*	0.095 [2.96]**	0.052 [2.47]*
Cabinet	3.464 [1.65]	2.096 [1.55]	3.557 [1.69]+	2.129 [1.58]	4.199 [1.84]+	2.272 [1.59]	4.374 [1.82]+	2.308 [1.58]	4.949 [1.93]+	2.448 [1.60]	3.357 [1.61]	2.211 [1.65]
Office	2.732 [1.57]	2.326 [3.69]**	3.135 [1.72]+	2.39 [3.57]**	2.335 [1.40]	2.275 [3.78]**	2.917 [1.55]	2.184 [3.25]**	1.906 [1.00]	2.174 [3.78]**	4.44 [2.40]*	2.605 [2.94]**
SDB Goal	-0.017 [0.09]		0.016 [0.08]		-0.032 [0.22]		0.042 [0.21]		0.095 [0.43]		-0.064 [0.40]	
S8a Goal		0.388 [3.67]**		0.408 [3.99]**		0.329 [3.21]**		0.426 [4.18]**		0.446 [4.20]**		0.32 [2.59]*
2004	-1.046 [0.53]	-0.716 [0.66]	-1.018 [0.51]	-0.7 [0.65]	-0.62 [0.31]	-0.602 [0.56]	-0.655 [0.31]	-0.666 [0.62]	-0.824 [0.39]	-0.642 [0.59]	-0.409 [0.21]	-0.551 [0.51]
2005	-1.324 [0.70]	-0.747 [0.76]	-1.251 [0.66]	-0.734 [0.74]	-1.176 [0.65]	-0.689 [0.70]	-1.212 [0.64]	-0.772 [0.78]	-1.445 [0.74]	-0.755 [0.75]	-0.654 [0.36]	-0.598 [0.62]
Constant	7.923 [2.53]*	0.544 [0.37]	7.939 [2.69]**	0.639 [0.43]	10.826 [3.34]**	1.273 [1.10]	12.475 [3.98]**	1.367 [1.19]	11.701 [3.84]**	1.304 [1.14]	9.255 [2.80]**	1.14 [0.78]
Observations	114	114	114	114	114	114	114	114	114	114	114	114
R ²	0.25	0.34	0.25	0.34	0.24	0.35	0.19	0.33	0.18	0.33	0.3	0.35

Robust z statistics in brackets

+ significant at 10%; * significant at 5%; ** significant at 1%

Table 4

Marginal Effects of Coefficients (table 2 – regressions 1 and 2)

	SDB		S8a	
	dy/dx	std. error	dy/dx	std. error
Minority	0.14	0.043	0.04	0.020
Female	-0.08	0.069	-0.05	0.031
Total Employees (1000)	-0.05	0.015	-0.01	0.013
Total Budget (\$1,000,000)	-0.01	0.003	0.00	0.000
Discretionary Budget (\$1,000,000)	0.08	0.023	0.03	0.011
Cabinet*	2.68	1.512	0.63	0.482
Office*	2.86	1.584	2.81	0.484
SDB Goal	0.04	0.161		
S8a Goal			0.25	0.041
2004*	-1.09	1.596	-0.43	0.513
2005*	-1.21	1.591	-0.38	0.471

*Discrete change from 0 to 1

**The marginal effects have been multiplied by 100 to aide in interpretation. The reported coefficients now reflect percentage changes.

Table 5

Marginal Effect of Coefficients (individual representation variables)*

	dx/dy	dx/dy for individual demographic variables		
SDB				
African American	0.08	0.14		
Hispanic	0.61		0.66	
Asian	-0.61			-0.46
Native American	-0.09			-0.26
S8a				
African American	0.02	0.02		
Hispanic	0.26		0.28	
Asian	0.02			0.003
Native American	0.05			-0.010

*The marginal effects have been multiplied by 100 to aide in interpretation. The reported coefficients now reflect percentage changes.

ⁱ The price benefit entailed adding up to 10% to the price of bids and offers received from firms that did not qualify for the SDB Certification program but that were competing with qualifying firms for the same acquisition. Small disadvantaged businesses that received the PEA and went on to win contract awards were subject to the “limitations in subcontracting” rule and had to perform no less than the following percentages of the contract itself: 50% for supplies and services; 15% for general construction; and 25% for special trade construction.

ⁱⁱ The contracting officer may also consider the extent to which small disadvantaged businesses are specifically identified; the extent of the prime contractor’s enforceable commitments to use small disadvantaged businesses; the complexity and variety of work small disadvantaged businesses are to perform; the realism of the proposal; past performance of prime contractor’s compliance with small disadvantaged business contracting goals; and the extent of small disadvantaged business participation in regards to the value of the total acquisition.

ⁱⁱⁱ A small disadvantaged business waiving the PEA and seeking evaluation credit for proposed small disadvantaged business participation would receive credit for any work in the targeted NAICS subsectors that it proposed doing in-house and/or that it proposed subcontracting to other small disadvantaged businesses.

^{iv} The program also includes special provisions for set-asides for Indian tribe and Alaska native concerns.