

The Effectiveness of Affirmative Action in Highway Procurement

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PRELIMINARY AND INCOMPLETE

Abstract

Affirmative action programs designed to increase the utilization of firms owned by minorities and women in public procurement are prevalent. In this paper I study the effectiveness of such programs in road construction, a large public procurement market that makes extensive use of affirmative action. I first examine variation in states' goals for the utilization of disadvantaged business enterprises (DBEs) over time. I find that affirmative action significantly increases contract awards to these firms, as each 10 percentage point increase in the DBE goal raises statewide utilization of DBEs as a fraction of contract dollars awarded by 4.3 percentage points. Affirmative action also varies across projects within a state. Using data from California state highway procurement, and an instrumental variables approach to obtain exogenous variation in a project's DBE goal, I find that raising the affirmative action goal on a particular project by 10 percentage points increases the fraction of the contract subcontracted from DBEs by 5.4 percentage points. Finally, I document that highway construction firms in California, particularly those owned by Blacks and Asians, exhibit considerable racial segregation, and I exploit this fact to examine the effect of affirmative action on the success of minority-owned firms. Following the significant curtailment of affirmative action in California due to a direct statewide ballot initiative, the number of highway construction establishments located in predominantly Black and Asian neighborhoods fell relative to the rest of the state, even conditional on the number of non-construction establishments. This suggests that affirmative action policies may play a role in the net survival rates of minority-owned firms.

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1 Introduction

Affirmative action programs in public procurement are among the more important government programs intended to advance self employment opportunities for minorities and women. In 2002, 6.75 percent of federal procurement dollars were awarded to disadvantaged business enterprises through the Small Business Administration, and preferential treatment for minority firms is a common feature of many state and local government agencies. Recent court decisions and state measures have reduced the scope of, and in some settings eliminated, affirmative action programs based on race or gender, which has given renewed importance to understanding the role of affirmative action in the success of self-employed minorities and women.

Understanding the impact of affirmative action programs in procurement requires examining two questions. First, how effective is affirmative action at increasing purchases from minority firms? Second, given that we see an effect on minority firm utilization, to what extent does affirmative action affect the formation and survival of minority owned businesses? In this paper I provide new evidence on these two questions in the context of affirmative action programs in highway procurement. Highway construction and repair is an important public procurement market that makes intensive use of affirmative action programs. In 1998, states awarded \$14.6 billion of construction and repair contracts using federal funds, of which \$1.9 billion was awarded to firms owned by minorities and women. In addition, most states and many counties and cities also use affirmative action to direct projects funded from other sources to firms owned by minorities and women.

Higher DBE goals do not necessarily raise the utilization of firms owned by minorities and women for two reasons. First, the DBE goal may not be binding, in which case the marginal effect of small changes to the goal would be zero. Second, goals for the utilization of DBEs are often not perfectly enforced. For instance, a contractor facing a requirement to subcontract a fraction of a contract to DBEs can skirt this requirement by documenting a “good faith effort” to employ firms owned by minorities and women. In the first portion of this paper, I present evidence suggesting that these programs in fact do

have significant bite, as more intensively applied affirmative action programs, both across states and across projects within the same state, are associated with greater purchases from DBEs.

I begin by examining state level data regarding affirmative action goals and DBE utilization over the entire history of the Federal Highway Administration's affirmative action program. I utilize changes in affirmative action goals over time within states to identify the effect of affirmative action intensity on the level of DBE purchases. I find that higher DBE goals are associated nearly one-for-one with higher DBE utilization. Part of this effect, though, seems to be accounted for by trends within states. Once state-specific time trends are included, I find that a ten percentage point increase in the DBE participation goal is associated with an increase in the percentage of contract dollars awarded to DBEs by 4.3 percentage points.

Next, I focus on variation in participation goals and utilization across projects within a particular state. I use data from California Department of Transportation (Caltrans) highway construction projects, where the state sets a DBE participation goal separately for each project. Variation in this goal is endogenously related to DBE utilization, since the goal is set based on the availability of DBEs in the neighborhood of the project, the extent of subcontracting opportunities on the project, and on the extent to which DBEs are likely to be utilized through race-neutral measures. To overcome this endogeneity bias, I utilize an instrumental variables approach, where I instrument for the DBE participation goal on a project using the average goal used during the year on projects in distant parts of the state. This instrument should capture policy variation that is unrelated to the characteristics of the project or the local supply of DBEs. The results suggest that increasing the minority participation goal by 10 percentage points raises DBE utilization, by 5.4 percentage points as a fraction of contract value, and this is higher than the estimate obtained using OLS.

Based on the utilization results, affirmative action seems to shift out the demand for DBE firms, which may lead to an improvement in the net survival rates of these firms. In the last portion of the paper, I present suggestive evidence regarding the effect of affirmative action on the success of minority firms. Due to data limitations in measuring outcomes for minority firms subject to affirmative action and the

difficulty in obtaining exogenous variation in affirmative action, this has proved to be a difficult question to address.

I use the implementation of California's Proposition 209, which eliminated the consideration of race and gender in the awarding of state contracts, to provide evidence on the effect of affirmative action on minority businesses and economic activity in minority neighborhoods. I focus in particular on highway construction establishments, as firms in this industry derive most of their revenue from public projects and are therefore the most subject to policies in public procurement. I begin by showing that DBEs in the California highway construction industry tend to be segregated along racial lines, with Black-owned firms primarily located in zip codes in the fifth quintile of the Black population distribution and Asian-owned firms similarly located primarily in the fifth quintile of the Asian population distribution. Using data from the Zip Code Business Patterns, I find that the initiative's implementation coincided with a decline in the likelihood of primarily Black and Asian zip codes having a highway construction establishment of 2.6 and 2.1 percent, respectively. I find that zip codes in the fifth quintile of the Hispanic distribution, in contrast, saw an increase in the likelihood of having an establishment. The racial location of Hispanic-owned firms is more evenly spread across the Hispanic population distribution, which may help explain this finding.

Highway procurement is a useful setting for examining affirmative action for several reasons. First, the use of affirmative action is widespread. Since the late seventies and early eighties, most states have employed affirmative action to award contracts to minority owned firms. Second, affirmative action programs in highway procurement are in general comparable across states. Most states use percentage goals for the participation of minority-owned subcontractors by prime contractors. This allows for comparison across states, and furthermore allows one to more readily generalize results obtained from a particular state to other states. Finally, the highway construction industry is mostly comprised of firms selling to the government. According to the 2002 Census of Industries, 72.6 percent of the construction work performed by firms in the highway, street, and bridge construction industry was for government owned projects. As a result, changes in public procurement policy will have a strong effect on firms in

the highway construction industry. This will ease the burden placed on the data, as drawing inference regarding the effect of affirmative action on a given firm in the highway construction industry will provide more power than making the same inference regarding a firm in the broader construction industry

This paper proceeds as follows. Section 2 provides a review of the literature regarding the effect of affirmative action on minority utilization and self-employment. Section 3 provides background information on the affirmative action programs of the Federal Highway Administration and Caltrans. Section 4 describes the data that will be used; section 5 discusses the effect of affirmative action on purchases from minority firms, section 6 examines the evidence regarding affirmative action and the number of highway construction establishments, and section 7 concludes.

2 Literature Review

This paper examines two related aspects of the effectiveness of affirmative action – the impact of affirmative action on the utilization of DBEs and the impact affirmative action has on minority firms. As noted in a review by Holzer and Neumark (2000), evidence regarding these two questions in the literature is fairly sparse. The approach taken here in examining the first of these two questions is to examine variation in the intensity of the use of affirmative action. This stands in contrast to prior work in this area, which tends to focus on the effect on purchases from large discrete changes to affirmative action programs, such as program eliminations or adoptions. Blanchflower and Wainwright (2005) provide evidence on the change in utilization in several cities and counties where local affirmative action programs in procurement were halted. They also consider cases where affirmative action was eliminated by states in their state highway procurement programs specifically, making their study particularly relevant for this paper. Myers and Chan (1996) consider New Jersey contracting before and after the implementation of contract set-asides for minority- and female-owned firms. In general, the results suggest that eliminating affirmative action has a large adverse effect on purchases from minority firms, and conversely implementing affirmative action significantly improves purchases from minority firms.

Examining the timing of changes in DBE utilization surrounding the elimination or adoption of affirmative action can be a useful way to obtain exogenous variation in affirmative action, since the timing of the policy change is discontinuous while the underlying forces driving the policy change are likely to be continuous. However, much of the variation in affirmative action is in the degree of intensity of program application, and this warrants separate study since the effect on DBEs of eliminating affirmative action is potentially different from marginal changes in existing programs.

The effects of affirmative action on business success and firm formation and survival have proven more difficult to assess. Bates and Williams (1996) examine data from the Characteristics of Business Owners, utilizing a question in this survey that asks responding firms the revenues they derive from selling to the government. They find that minority business owners who rely heavily on government contracts are more likely to fail between 1987 and 1991. Blanchflower and Wainwright (1995) utilize data from the Current Population Survey to examine whether self-employment rates among minorities and women were lower after federal affirmative action programs were weakened by the case of *City of Richmond v. J.A. Croson Co.* In this case, the Supreme Court ruled that race-conscious programs must meet strict scrutiny requirements establishing a compelling need for the program and that the program is narrowly tailored. They find that self-employment rates among minorities and women were not significantly different post-*Croson*, despite the fact that many local affirmative action programs ended during this time. Chay and Fairlie (1998) examine cities' adoption of affirmative action programs in procurement, finding that Black self-employment rates rose dramatically in adopting cities.

Compared to the literature regarding procurement, a somewhat richer literature has examined the effects of affirmative action in employment. Leonard (1985) finds that firms' affirmative action goals are associated with higher employment of minorities, despite the fact that employment goals are less strictly enforced than quotas. One branch of this literature has utilized the fact that government contractors often face different affirmative action policies than firms not selling to the government. Heckman and Wolpin (1976), Leonard (1984), and Rodgers and Spriggs (1996) all study employment at contractors versus non-contractors to evaluate the employment effects of affirmative action, often finding mixed results. More

recent studies have moved away from using contractor status as a source of variation in affirmative action across firms. McCrary (2007) examines the effects of court-ordered hiring quotas in police departments, and Holzer and Neumark (2000b) find that affirmative action increases the hiring and training of minority workers. Myers (2007) uses California's Proposition 209 to evaluate the effects of affirmative action in the labor market, finding significant adverse employment effects for minorities and women following the elimination of affirmative action.

3 Background: Affirmative Action in Highway Procurement

3.1 Affirmative Action and the Federal Highway Administration

Beginning in 1982, the U.S. Department of Transportation required states to implement affirmative action programs for minorities in the awarding of road construction contracts that are funded with federal aid. States were required to award at least 10 percent of the value of its contracts to small businesses owned and operated by minorities. States could petition to set a goal for minority participation of less than 10 percent. In 1987, the program was extended to include women-owned business enterprises (WBEs), so that states could satisfy the 10 percent requirement by awarding contract dollars to firms owned by women in addition to purchases from minority-owned business enterprises (MBEs). It was common prior to 1987 for states to set a separate goal for the participation of WBEs. In any case, subcontracts with DBEs, and not just the value of prime contracts awarded to DBEs, are counted toward meeting the DBE goal.

3.2 Affirmative Action at Caltrans

The California Department of Transportation (Caltrans) sets a statewide goal for the participation of DBEs on state highway construction, which it meets by setting a DBE subcontractor participation goal on a project-by-project basis. To qualify as a DBE, a firm must meet two requirements: an ownership requirement that at least 51 percent of a business must be owned by the group for which the goal applies, and an operations requirement that the minority or female owners be involved in the day-to-day operation of the business.

Firms bidding for construction contracts must supply a list of the subcontractors to be used in the completion of the project. A qualifying bid either meets the participation goal stipulated in the contract, or documents a good faith effort to locate DBEs in the event that the participation goal is not met.² Bids are often rejected for failing one of these two tests. From May 1996 until the end of 2002, 36 low bids were rejected on this basis.

The participation goals are allowed to vary across contracts, depending on the local DBE supply of firms able to provide the work required on the contract. Furthermore, these goals may be used less intensively in areas of the state with an already high level of DBE utilization.

Voters in California passed a statewide referendum, Proposition 209, in June 1996 that was intended to eliminate the consideration of race and gender in state contracting, education, and employment. This ballot initiative affected only those projects using only state funds, as projects using federal funds were required to maintain the affirmative action policy mandated by the U.S. Department of Transportation.

Two factors delayed the application of Proposition 209 to many state programs. First, the California constitution states that local agencies will continue to enforce state statutes until they are repealed by the legislature or ruled unconstitutional by the courts. Second, certain forms of affirmative action were not explicitly ruled out by Proposition 209. As a result, affirmative action continued to be used in part over ambiguities regarding what programs Proposition 209 actually covered.

Despite the fact that a federal appeals court in 1997 upheld Proposition 209, participation goals continued to be used by Caltrans throughout 1997 and into 1998. Two relevant legal decisions were delivered in early 1998, both coming down against the use of participation goals in contracting. In *Hi-Voltage Wire Works v. City of San Jose*, which was decided in February of 1998, the courts found that a San Jose program similar to the one used by Caltrans was in violation of Proposition 209. Subsequently in

² Prior to a rule change in 2000, even if the contractor was a DBE, it still needed to meet the subcontractor participation goal. To meet the good faith effort requirement, the bidder must document its efforts to locate DBE subcontractors such as advertisements placed in trade magazines and minority focused papers. Next it must show how it attempted to solicit bids directly from DBE subcontractors. If a DBE firm was located, the bidding firm must show what portions of the contract were made available, and if the DBE was not able to perform the work, what efforts were made to assist the DBE in obtaining bonding, lines of credit, or technical assistance in performing the work. If a lack of equipment or materials prevented the DBE from performing the work, efforts must also have been made by the bidder to remedy this deficiency.

March of 1998, a federal court ruling in *Monterey Mechanical v. Wilson* was finalized that stated that the use of subcontractor goals, or requiring evidence of firms' efforts to meet these goals, violated the equal protection clause of the U.S. Constitution. Following these court rulings, in March of 1998 California Governor Pete Wilson issued an executive order stating that all state programs utilizing gender and race based participation goals in the awarding of state contracts were to be immediately suspended.

One other important feature of the executive order is worth mentioning. Only contracts funded entirely by the state were affected, since eliminating affirmative action would potentially place funding from federal sources in jeopardy. This is an important aspect of the road construction industry, as approximately half of the contracts awarded by the state used federal funds (Marion, 2006). Therefore, Proposition 209 did not fully eliminate affirmative action in California, it only significantly curtailed its use. Furthermore, affirmative action was not fully eliminated at other levels of government. For instance, the city of San Francisco continued to use race conscious affirmative action programs at least until a court ruling found it violation of Proposition 209 in 2004.

4 Data

4.1 State DBE Utilization

As already discussed, states set DBE participation goals for purchases of road construction projects. In addition, state departments of transportation must track commitments and subsequent actual awards made to DBEs by prime contractors and report this information to the FHWA. The FHWA uses this information to evaluate the satisfaction of a state's DBE goal. In the first portion of the paper, I will use these data for the years 1983-1999. Prior to 1988, awards made to women-owned businesses were not used towards satisfaction of the DBE goal. However all states set separate WBE goals during this time and recorded commitments and awards made to WBEs. After 1987, the MBE and WBE figures were not separately reported, and only total DBE commitments and awards were recorded.

4.2 California Highway Procurement Auctions and Firms

The project-level data in this study consists of information for highway construction auctions conducted by the California Department of Transportation between May 1996 and December 2002. For each contract up for bid, a set of information describing the project is given, including the road and county where the work will take place; a short description of the nature of work to be completed; the estimated number of working days to complete the project; and an engineer's estimate of the cost of completing the project. The engineer's estimate is formulated by Caltrans, and reflects project-specific factors incorporating past bids on similar projects. The federal-aid status of the contract is given as well as the DBE participation goal that applies to that project. For every general contractor submitting a bid, the value of the bid and a list of first tier subcontractors is given.³ A unique identifier is assigned to each firm, so it is possible to track firms across contracts. For a subset of 1264 of these contracts, I was able to obtain the utilization of DBE subcontractors, and the final payments by Caltrans to the prime contractor.

Caltrans attempts to completely specify *ex ante* the details of the contract. However, the quantities are subject to change as the project progresses and uncertainty is resolved. For each item, Caltrans provides a list of preapproved specific brands and models of the items that can be used by the contractor to fulfill the contract. In addition, Caltrans dictates specific tolerances and specifications that the final product must meet. Should changes in specifications occur that require different amounts of certain goods than predicted, the contractor is compensated by the unit price placed on that item.

Further information regarding firms in this market is obtained from the DBE directory maintained by Caltrans. This directory contains information on all firms qualified to be counted as DBEs toward fulfilling the DBE subcontracting requirement in a contract. This directory contains information on the firm's location, the work it is willing to perform, and the race of the owner.

4.3 Zip Code Business Patterns

The zip code business patterns data provides the number of establishments at the five digit zip code level. Establishments simply represent the unique geographic locations of firms, and several

³ A first tier subcontractor performs at least \$10,000 or half of a percent of the contract, whichever is greater.

establishments can be owned by the same firm. These data provide the number of establishments at a detailed level of industry, which will be used to identify the number of establishments specifically in the highway construction industry in a particular zip code. The data used in this paper is yearly information from 1994-2002, spanning the implementation of Proposition 209. A significant reclassification of industries occurred in 1997, when the Census transitioned from using Standard Industry Classification (SIC) codes to using North American Industry Classification codes. The primary industry I focus on is Highway and Street Construction Contractors, Excluding Elevated Highways, SIC 1611/NAICS 234110, an industry providing a virtually perfect match between the two industry taxonomies. I also examine the construction industry more generally, which includes SIC 15/16/17 and NAICS 23. The correspondence between the two classifications is less precise here, with the discrepancies between the two due largely to NAICS including establishments specializing in management services within the construction industry. However according to the bridge between the SIC and NAICS provided by the Census, 98 percent of establishments in NAICS 23 are in the SIC construction category, and NAICS 23 includes all establishments from the SIC construction category.

5 Affirmative Action and DBE Utilization

5.1 Variation across states

In this section, I consider how affirmative action affects utilization of minority firms by examining variation in the intensity of affirmative action programs across states. I begin by describing state affirmative action goals and DBE utilization. States are required to set a minimum 10 percent goal for the utilization of disadvantaged business enterprises, and while states tend to cluster at this minimum standard, there remains significant variation in the intensity of affirmative action across states. Table 1 displays summary statistics for state programs. The average state awards \$308.5 million (in 1999 dollars) in federal-aid contracts per year, 12.6 percent of which is awarded to either MBEs or WBEs. States set the minimum 10 percent DBE goal for 73.8 percent of the state-years. The average goal that is set is

11.65 percent, and, reflecting the clustering of states at 10 percent, the standard deviation of the DBE goal is relatively small at 2.58 percent.

The clustering of states at the minimum goal suggests that the desired goal for most states is less than 10 percent. Despite this, states in general seem compliant with the goals they set out. States award contracts in excess of the DBE goal in 69 percent of the state-years.

Table 1 also presents evidence regarding the evolution of state affirmative action programs over time by splitting the sample between three time periods: 1983-1987, 1988-1993, and 1994-1999. The overall DBE goal has changed only modestly between these three periods. From 1983-1987, the average goal was set at 12.01 percent, and declined to 11.43 percent in the later period. This stability in the DBE goal masks two important trends in states' affirmative action programs. First is the importance of women-owned subcontractors. Prior to 1988, states set separate goals for the utilization of minority owned firms and firms owned by women, and these goals were met separately. During this time, the average MBE goal was 9.9 percent, nearly five times the average WBE goal of 2.1 percent. As a result utilization was also tilted significantly towards MBEs, as these firms received 11.0 percent of contracting dollars while WBEs were awarded 3.1 percent. After 1988, states only set a common DBE goal, which could be satisfied by contracting with either MBEs or WBEs. The utilization of WBEs subsequently rose dramatically, as these firms received 5.0 percent of contracts from 1988 through 1993 and 5.8 percent of contracts between 1993 and 1999. The latter figure is nearly on par with MBE utilization, which was 7.0 percent during this time. The second important trend during this time was the decline in states' compliance with the affirmative action goals set. While approximately 75 percent of state-years meet the goal prior to 1994, between 1994 and 1999, only 59 percent of state-years are in compliance.

Figure 1 displays the trends in the contracting goals and the utilization of MBEs and DBEs over time. As previously described, these programs experienced a significant decline in MBE utilization and a significant increase in WBE utilization over time, while the overall utilization of DBEs has remained relatively stable. This figure highlights an additional compliance issue that has affected the utilization of DBEs. At the time of bidding for contracts, contractors commit to the utilization of minority and women

owned subcontractors to fulfill the stated goal, however this committed amount often differs from the actual level of DBE awards. If a subcontractor is unable to complete the work it was hired for, or if the scope of the project changes, the general contractor can substitute another subcontractor for the DBE originally hired. In general, a removed DBE must be substituted with another DBE, however contractors can skirt this requirement by making a “good faith effort” to find a DBE. As we see in Figure 1, the gap between the actual contract awards and the commitments made to DBEs grows noticeably after 1991.

In Table 2, the goal by state is reported for three years: 1984, 1991, and 1999. The goal reported for 1984 is the sum of the state’s MBE and WBE goal. Compared to later years, the DBE goal in 1984 is more likely to fall below 10 percent, however for many states the combined goal is actually higher than in later years. By 1991, during the time when WBE utilization counted toward satisfying the DBE goal, there is significant bunching at the 10 percent minimum, yet no state chose a DBE goal of less than 10 percent. Also, examining the goal, one sees that it tends to be set higher in states with high minority populations. For instance, California and New York have two of the highest DBE goals in 1984 and 1991. Both of these states, though, had substantially reduced their DBE goal by 1999.

This serves to illustrate the strategy that will be taken in this section to identify the effects of DBE goals on DBE utilization. I will consider changes in the DBE goal over time within a state and estimate the following equation:

$$U_{it} = \beta_0 + \beta_1 g_{it} + BX_{it} + \gamma_i + \alpha_i t + \varepsilon_{it} \quad (1)$$

where U_{it} is the utilization of DBEs as a percentage of the contract awards in state i in time period t and g_{it} is the DBE goal. The DBE goal g_{it} is likely to be correlated with the error term ε_{it} for several of the reasons already explained. The approach taken in this section will account for this correlation by controlling for fixed and time-varying factors that may affect g and U . To account for heterogeneity across states that is fixed over time, I include state fixed effects γ_i . Even conditional on state fixed effects, there may be factors that shift over time within a particular state that affect both g and U . For instance, the supply of DBE firms may shift over time due to unobserved changes in human capital. Alternatively,

changes in the level of discrimination by prime contractors could change over time, altering both DBE utilization and the need for race-conscious measures in procurement. I account for any such state-level underlying trends in DBE goals and utilization with a state-specific time trend, α_{it} . The vector of covariates X_{it} includes year effects, state GSP, the state unemployment rates for minorities and women, and the party of the state governor. Therefore, the coefficient β_1 will be identified using changes in the DBE goal within a state relative to its trend.

Table 3 presents estimates of equation (1). In column 1, I present estimates of a specification without any controls, and I find that DBE goals are correlated with DBE utilization on nearly a one-for-one basis. In columns 2 and 3, I add year and state effects, respectively, yet these additions have little impact on the estimated DBE goal coefficient. In the specification shown in column 4, I add a state-specific time trend, which has a significant effect on the estimated coefficient. Here I obtain an estimate for β_1 of 0.43, which suggests that each 10 percentage point increase in the DBE goal leads to a 4.3 percentage point increase in DBE utilization. Finally, the addition of the vector of controls has little effect on the estimated coefficient. The state-level results suggest a strong correlation between DBE goals and utilization, however over half of this relationship can be explained by underlying state-level trends.

5.2 Variation across projects

While DBE goals vary considerably across states, an additional source of variation in affirmative action is across projects within a state. States often set a separate DBE goal on a project-by-project, which affords some discretion in targeting affirmative action to those instances where it is most effective or least costly. This discretion leads to particular problems when estimating the effect of affirmative action on DBE utilization. Goals are endogenous to DBE supply and subcontracting opportunities, and are often set lower when the base utilization of DBEs is already high.

Table 4 describes the characteristics of contracts awarded by Caltrans, split by the level of the DBE subcontracting goal used by project. The winning bid of the average federal aid project is \$2.6 million. The average DBE goal is 11.3 percent, weighted by the engineer's estimate of project cost. In other

words, at least 11.3 percent of federal aid contract dollars are to be awarded to DBE subcontractors. There is a significant degree of variation in this goal across projects, as the standard deviation of the DBE goal represents 31 percent of its mean. For the average project, DBEs are hired for \$358 thousand of work, amounting to 12.6 percent of total contract dollars. The DBE goal is set higher for larger projects. The average winning bid for projects with between 10 and 20 percent participation goal is \$4.1 million, compared with \$1.4 million for projects with a DBE goal of between 1 and 10 percent and \$467 thousand for those projects where the goal is set to zero. While the DBE goal may be reflected directly in the winning bid if it raises the costs of prime contractors, independent measures of project scale such as the engineer's estimate, number of project workdays, and the number of items required for the project are all considerably larger when the DBE goal is higher. This may indicate that there is a fixed cost of subcontracting, which makes high DBE goals unattractive for small contracts.

Two other features of the data stand out. First, DBE subcontractors are used to a considerable extent even on projects with a DBE goal of zero, receiving subcontracts amounting to 6.4 percent of these contracts. Even so, the degree of DBE subcontracting rises substantially with the DBE goal, as utilization is 13.5 percent of projects with a goal of between 10 and 20 percent. Second, the number of utilized subcontractors increases substantially as the goal is increased. This could reflect Caltrans setting a higher goal for projects with greater subcontracting opportunities; however Marion (2006) documents a substantial decline in the use of subcontractors for state funded contracts after Proposition 209, which eliminated the DBE goals for these contracts.

The primary goal of this section is to estimate the relationship between DBE utilization and the project-specific goal:

$$U_i = \beta_0 + \beta_1 g_i + BX_i + \varepsilon_i \quad (2)$$

where U_i is the percentage of the contract payments that go to DBE subcontractors on project i , g_i is the project specific goal, and X_i is a vector of project characteristics such as scale, location, and season. For several reasons, g_i could be correlated with the error term ε_i . The goal is set higher when there are more

subcontracting possibilities and when there is a large local supply of DBEs. These factors tend to bias the estimated coefficient β_1 upward. On the other hand, contractors can fall short of the goal by making a “good faith effort” to employ DBEs. When this is likely to occur, the state may set goals higher to offset this behavior, which would tend to bias the coefficient β_1 downward. Similarly, some areas of the state have a high base level of DBE utilization. In this case, the state may need to use affirmative action less intensively.

One can classify the variation in g_i into two categories. First are project-specific factors such as location and type of work. These tend to be endogenous to DBE utilization at the project level for the reasons just described. The second type of variation is policy related, where shifting priorities of the state over time lead to changes in the DBE goal employed. To obtain exogenous variation in g_i , I will utilize only the second type of variation, due to statewide policy choices, which should be exogenous to unobserved project-specific factors that shift both U_i and g_i , conditional on time trends. I will use an instrumental variables approach, where I instrument for the project-specific goal using the average goal used for projects in distant parts of the state in the same year. California is divided into 12 districts by Caltrans. Figure 2 shows a map of California, with the Caltrans districts overlaid over the counties in the state. Caltrans districts are geographically sizable. To describe the average goal in other parts of the state, I will take the average goal used in non-neighboring districts. DBE supply may be spatially correlated, but by taking the average goal in non-neighboring districts, I am considering projects that are outside the project’s relevant market. From the map in Figure 2, we see that except in rare cases, the nearest border of a non-neighboring is a considerable distance away.

Even if non-neighboring districts are outside the relevant market of a project, the IV strategy will be invalid if there are factors shifting DBE supply across the entire state. These factors are likely to evolve slowly over time, so I will account for them using a quadratic time trend.

Table 5 presents the results of this estimation. In columns (1) and (2), I present OLS estimates of the relationship between DBE utilization and the project goal. The specification shown in the first column includes no controls, and the coefficient β_1 is estimated to be 0.398. This indicates that increasing the

DBE goal by 10 percentage points increases the fraction of the project subcontracted to DBEs by 4 percentage points. Column (2) displays the specification with the full set of controls, which include measures of project scale such as the log of the engineer's estimate and project workdays, dummies for the type of work on the project, month effects, and a quadratic time trend. Interestingly, the addition of these controls changes the point estimate only slightly to 0.41.

In columns (3) and (4) of Table 5, I present the first stage relationship between the project DBE goal and the DBE goal in non-neighboring districts. We see that a 10 percentage point increase in the goal in other parts of the state in a particular year is associated with a 3.8 percentage point increase in a project's goal. In Columns (5) and (6), I present the IV estimate of β_1 , which is 0.54 regardless of whether or not controls are included in the specification. This suggests that OLS estimates actually understate the marginal effect of increasing DBE goals, and indicates that the state may use affirmative action less for projects likely to intensively use DBEs even in the absence of affirmative action.

6 Proposition 209 and the Number of Establishments

Having established that affirmative action affects the demand for minority-owned firms, I next turn to the question of how affirmative action affects the success of minority-owned firms. This question has proved to be difficult to answer, as data rarely allow one to observe both measures of firm success, the race of the owner, and whether a firm is a government contractor. Furthermore, obtaining exogenous changes in affirmative action is difficult.

In this section, I will use the Zip Code Business Patterns data to examine how the number of highway construction establishments located in areas with high minority populations in California changed surrounding the implementation of Proposition 209, which eliminated the consideration of race and gender in the awarding of state contracts. Prop. 209 was approved by voters in 1996, however was not broadly implemented in public procurement until an executive order by Governor Wilson in early 1998.

This Proposition represents plausibly exogenous variation in the degree of affirmative action in procurement.

One objective of examining changes in the number of highway construction establishments in high-minority areas is to indirectly measure how affirmative action alters the net survival of minority-owned firms. As I will show in this section, firms tend to be segregated along racial lines, so that firms located in areas with a high minority population are far more likely to be owned by minorities. Furthermore, the highway construction industry is mostly composed of firms selling to the government, as 72 percent of revenues in this industry derive from public sources according to the 2002 Census of Construction. By examining firms in this industry, I am almost exclusively studying public contractors and therefore those firms most impacted by public procurement policies such as affirmative action. This combined with the strong segregation of minority firms indicate that changes in the number of highway construction establishments in high minority areas may, under certain circumstances, tell us a considerable amount about the effect of affirmative action on the net survival rates of minority establishments.

6.1 Firm segregation

I begin by documenting the degree to which highway construction firms are geographically segregated along racial lines. I present evidence from the 2003 directory of DBE firms maintained by Caltrans. This directory is a listing of firms qualified to be used as DBEs on Caltrans contracts, and contains information on the race of the owner and the zip code in which the firm is located. Importantly, the directory contains firms owned by white women, so it also allows for the comparison of minority firm location with the location of white-owned firms. I drop firms located outside of California.

Table 6 provides the distribution of firms over the racial concentration of zip codes. In Panel A, I display the number of black-, Hispanic-, Asian, and white-owned firms by the fraction of the zip code population that is black. The firms in the Caltrans DBE directory are relatively balanced across racial groups. Of the 1641 firms in the directory, 311 are black-owned, 480 are owned by Hispanics, 395 are owned by Asians, and 455 are owned by white females. Despite this balance, black firms are overwhelmingly located in predominantly black zip codes. Of the 23 firms located in zip codes where at

least 60 percent of the population is black, 21 are black-owned. Furthermore, while only 10 percent of firms not owned by blacks are located in zip codes with at least a 20 percent black population, 48 percent of black-owned firms are located in these zip codes.

While black-owned firms seem to be the most highly segregated, a similar though less pronounced pattern emerges for Asian-owned firms. Asian-owned firms account for 24 percent of the firms in the directory, yet account for 55 percent of the 67 firms located in zip codes with a population that is at least 40 percent Asian. Hispanic-owned firms are less segregated by race, though some segregation is still noticeable. These firms account for 29 percent of the 1641 firms in the directory, yet account for 54 percent of firms in zip codes with a population at least 60 percent Hispanic.

Further evidence of the degree of firm segregation is presented in Figure 3. Here I divide zip codes into quintiles of their racial concentration, and I plot the distribution of black-, Hispanic-, and Asian-owned firms across these quintiles. In Panel A, I consider the distribution of firms across quintiles of the zip codes according to the percentage of the zip code population that is black. White, Hispanic, and Asian firms are distributed similarly across the black population, with more of these firms located in the third, fourth, and fifth quintiles of the black population. 33 percent of white firms locate in zip codes in the highest quintile of black, compared with 34 percent of Hispanic firms and 40 percent of Asian firms. However, black-owned firms overwhelmingly locate in predominantly black zip codes, as 72 percent of black owned firms locate in zip codes in the fifth quintile of the black population distribution.

Panel B displays results from a similar exercise, where the distribution of firms is shown across the quintiles of zip codes' Hispanic population percentage. The results are far less striking than for the segregation of black-owned firms. Considering the highest quintile zipcodes of Hispanic population, 32 percent of Hispanic firms locate there compared with 17 percent of Asian-owned firms and 18 percent of white-owned firms.

As with Black- and Hispanic owned firms, Asian-owned firms exhibit a considerable degree of segregation. Panel C plots the distribution of firms across quintiles of the Asian population. 60 percent

of Asian-owned firms are located in the highest quintile of the Asian population. This compares with 32 percent of Hispanic firms and 43 percent of Black firms.

6.2 Number of establishments

In this section, I present evidence of the effect of affirmative action on procurement-intensive industries in predominantly minority areas. Using the Zip Code Business Patterns data, the measure of business outcomes I will use are the number of establishments in the construction industry, and more specifically the highway construction industry. Firms in these industries are likely to sell to the government, and the average minority-owned firm in these industries will have been more strongly affected by state affirmative action programs than minority-owned firms in other industries. Affirmative action in California procurement was significantly curtailed in 1998, and I will use the timing of this policy change to identify the effect of affirmative action on businesses located in minority areas.

Given the degree of firm segregation documented in Section 6.1, examining highway construction establishments in high minority areas may under some circumstances yield direct evidence of the effect of affirmative action on minority firms. In the extreme case, if predominantly Black zip codes are comprised entirely of Black-owned firms, then any change in the number of establishments in these zip codes represents a net change in Black-owned establishments. In the intermediate case where firms in predominantly Black zip codes are merely more likely to be Black-owned, the main assumption that is required is that white entrants are distributed geographically similarly to white incumbents. The elimination of affirmative action reduces the demand from Black-owned firms and increases the demand from white owned firms, which may induce white entry and Black exit. If the white-owned firm enters the same zip code that the Black firm exits, then even if affirmative action had an adverse effect on minority firm success it could not be detected by looking at the overall number of establishments in a zip code, even if the firms there are most often Black-owned. It is therefore necessary to assume that white entrants are distributed geographically similarly to white incumbents. This is likely a reasonable assumption here, as establishments are being measured at the zip code level, yet the relevant market in the construction industry is geographically much broader. Therefore, even if minority exit leads to entry by a

white firm, the characteristics of the road construction industry do not suggest that the firm will be induced to enter the exact zip code where the exit occurred.

The empirical strategy is to compare the number of construction establishments in hi-minority zip codes with that observed in other areas of the state. This can be done conditional on overall business activity in the state, which picks up any underlying shocks affecting hi-minority areas. This suggests a difference-in-difference (DD) specification of the form

$$y_{it} = \gamma_0 + \gamma_1 I(\text{year} \geq 1998) * q5_i + \gamma_2 x_{it} + \varphi_t + \rho_i + v_{it} \quad (3)$$

where y_{it} measures either the log number of highway construction establishments or the log number of construction establishments. Since only 33 percent of zip codes have highway construction establishments, one specification will also consider a linear probability model where the dependent variable is an indicator for having a construction establishment. The variable $I(\text{year} \geq 1998)$ is an indicator for being in the post-Prop. 209 period, and $q5_i$ is a dummy variable indicating whether the zip code is in the fifth quintile of the distribution of either Blacks, Hispanics, or Asians. The coefficient of interest is therefore γ_1 , which describes the difference in establishments between hi-minority and low-minority areas, before and after the contraction in affirmative action. Unobserved differences across zip codes are captured in the zip code fixed effects, ρ_i , which also captures the direct effect of being in the fifth quintile of the racial distribution. Common shocks affecting all firms in a given time period are captured by the year effects, φ_t .

Finally, in each specification I will also control for the log number of non-construction establishments, x_{it} , located in zip code i . Zip codes may be hit by year-to-year shocks that affect firm formation and survival, and if these shocks differentially affect minority neighborhoods and are correlated with the implementation of Proposition 209, this will bias the estimates of γ_1 . By controlling for the number of non-construction establishments, this specification captures unobserved factors affecting business formation at the zip code level. Therefore, for any unobserved variables to bias the estimated coefficients, they would have to differentially affect construction establishments specifically located in hi-minority zip

codes. Controlling for non-construction establishments could introduce bias if there are firms in the non-construction sector who could also be adversely affected by affirmative action. This bias is likely to be small, since public procurement represents a small portion of the non-construction sector, and furthermore this effect will bias our estimates of γ_1 toward zero and away from finding an effect.

Table 7 presents estimates of (3). The specifications shown in Columns 1-3 separately estimate (3) for Black, Hispanic, and Asian neighborhoods. Since there may be overlap between the neighborhoods, the specification shown in Column 4 considers them simultaneously. In Panel A, results are presented where the log of the number of highway construction establishments is the dependent variable. After Proposition 209, zip codes in the fifth quintile of the Black and Asian distribution experienced a decline in the number of highway construction establishments, though the estimate for Black zip codes is insignificant. Hispanic zip codes experienced an increase in highway construction establishments post-Prop. 209. It is worth noting that Hispanic firms were far less segregated in highly Hispanic neighborhoods than firms of other races.

One-third of zip codes have no highway construction establishments, so examining the log of this variable may miss important variation on the extensive margin. Panel B of Table 7 presents similar DD specifications with an indicator for whether a zip code has a highway construction establishment.⁴ A similar pattern emerges. Fifth quintile Black and Asian zip codes are respectively 2.6 and 2.1 percent less likely to have a highway construction establishment post-Prop 209 relative to other zip codes, and these estimates are statistically significant. Fifth quintile Hispanic zip codes are again slightly more likely to have an establishment after Prop. 209, however this estimate is statistically insignificant.

The specifications shown in Panel C of Table 7 consider the change in construction establishments more generally. It is important to consider these establishments for two reasons. First, firms in the construction industry, even outside of road construction, derive a substantial fraction of their revenue from selling to the government. Blanchflower and Wainwright (2005) indicate that 22 percent of revenue in this industry can be attributed to government sources. Second, firms within the construction industry

⁴ Similar results obtain if a probit is used rather than the linear probability model.

that do not sell to the government represent potential entrants into the public procurement market, perhaps more so than other industries. For instance, it may be relatively easy for firm that constructs buildings exclusively in the private sector to begin constructing buildings for the government. The results indicate that Black zip codes see a decline in the number of construction establishments of 3.5 percent relative to other zip codes. Interestingly, in the broader construction industry, fifth quintile Hispanic zip codes in fact see a decline in the number of construction establishments of 4.4 percent, which stands in contrast to the experience of these zip codes in the more specific highway construction industry. Fifth quintile Asian zip codes saw little change in the number of establishments in the broader construction industry.

Taken together, the results suggest that Black neighborhoods experienced a decline in the number of establishments in industries likely to serve the government, and there is evidence that Hispanic and Asian neighborhoods may have been similarly adversely affected. While Hispanic areas saw an increase in highway construction establishments post-Proposition 209, the broader construction industry experienced a decline. It is also worth repeating that Hispanic-owned firms appear to be less segregated into Hispanic neighborhoods than firms of other races, which may help explain the mixed results obtained for these zip codes.

7 Conclusion

This paper provides new evidence regarding the effectiveness of affirmative action in public highway construction, an understudied yet important policy. More intensively used affirmative action, both across states and across projects within a state, significantly increases purchases from firms owned by minorities and women. A 10 percentage point increase in the DBE goal is estimated to raise DBE utilization by 4.3 percentage points at the state level and 5.4 percentage points at the project level. The latter estimate is obtained using plausibly exogenous variation in the goal across projects, which captures only variation in state priorities and not project-specific factors such as local DBE supply and subcontracting opportunities.

Evidence is also provided suggesting that firms in this industry tend to be segregated across racial lines, so that minority-owned firms are more likely to locate in zip codes with a high concentration of

minorities in the population. When affirmative action is significantly curtailed in California state procurement, we see evidence of a decline in construction establishments, and highway construction establishments more specifically, in Black neighborhoods. Furthermore, zip codes with high Asian concentrations also see a decline in the number of highway construction establishments. However, the evidence is mixed regarding the effect of Proposition 209 on the number of establishments in Hispanic neighborhoods. Taken together, the evidence suggests that affirmative action may have an impact on the net survival rates of minority-owned firms.

Two caveats are worth mentioning when interpreting the results of this paper. First, I am not able to identify authentic minority- and women-owned firms from white male-owned “front companies.” Thus, the measure I provide likely overstates the increase in utilization of true disadvantaged business enterprises from raising DBE goals. Second, I do not attempt to measure the long-run effects of affirmative action policies. The existence of learning-by-doing, relational contracting, or information problems contributing to statistical discrimination would all lead to long-lasting effects of affirmative action. One such channel is the effect of affirmative action on negative stereotypes suggested by Coate and Loury (1993). Increasing the DBE goal today could have a permanent effect on DBE utilization that persists even if the goal is later reduced.

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Figure 1: Average State DBE Utilization

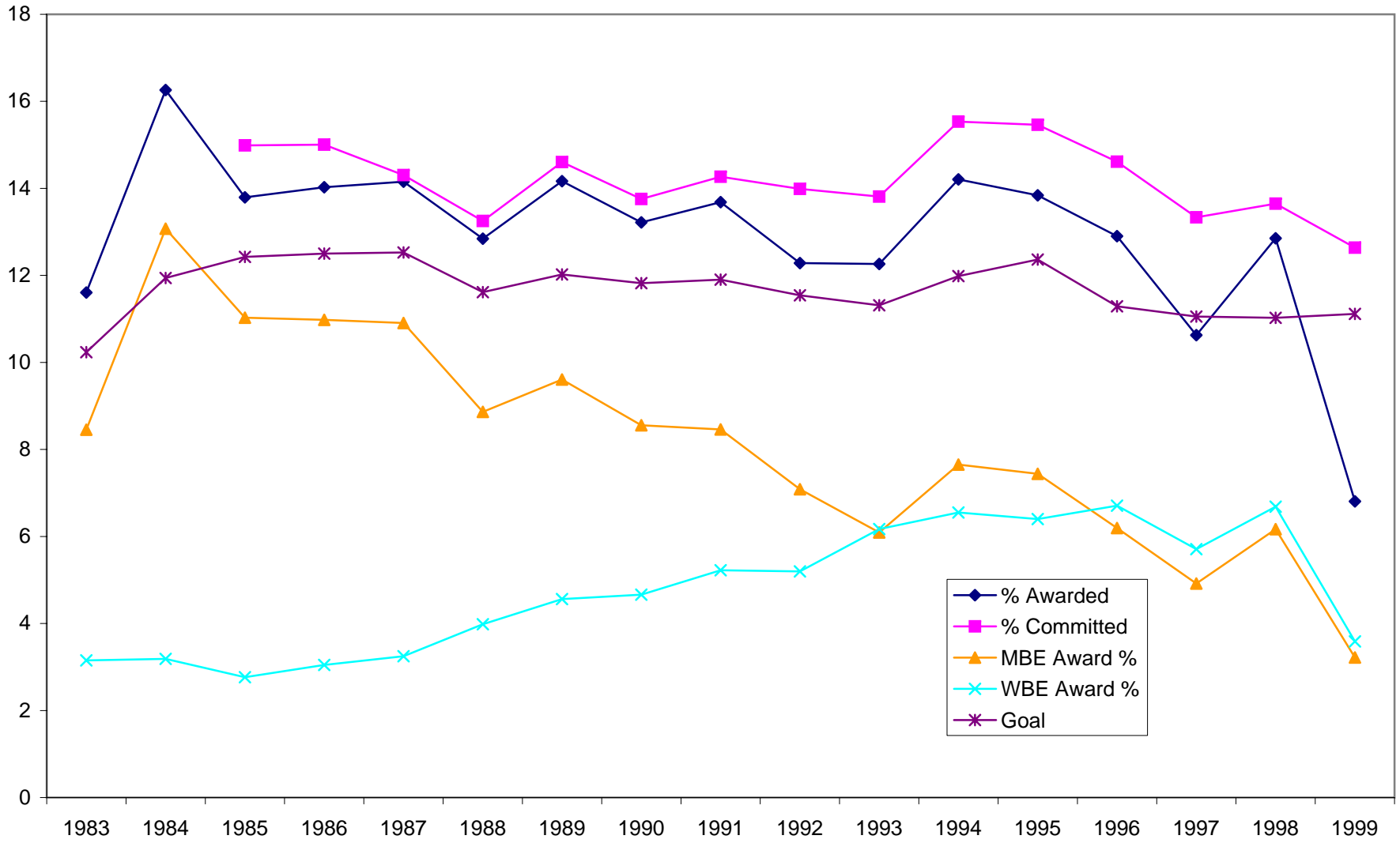


Figure 2: California Department of Transportation Districts



Figure 3: Distribution of Firms by Race of Owner and Zipcode Race Population Quintile

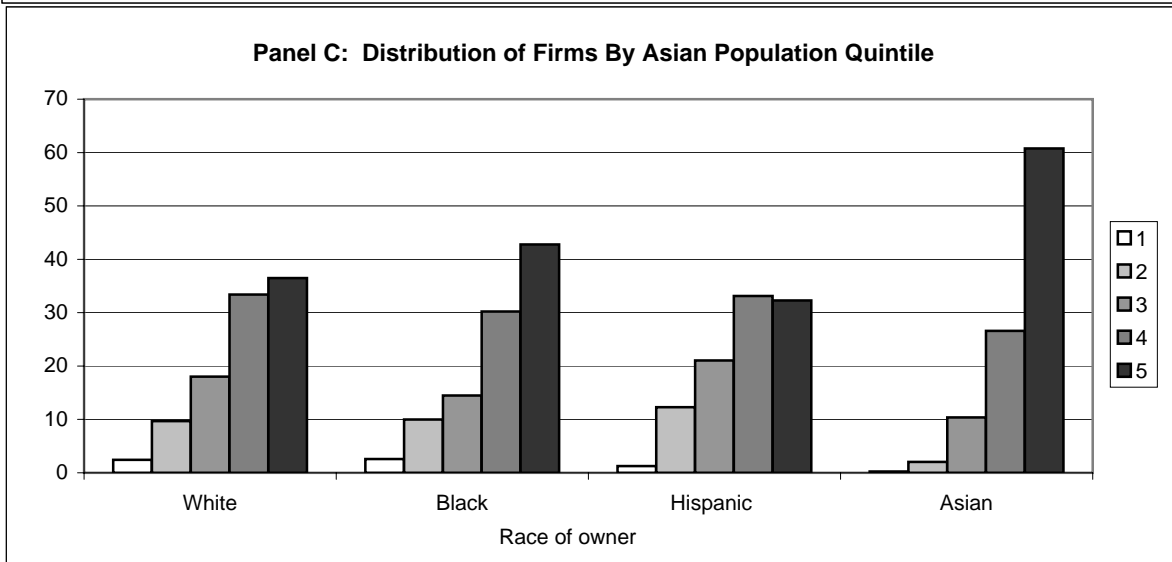
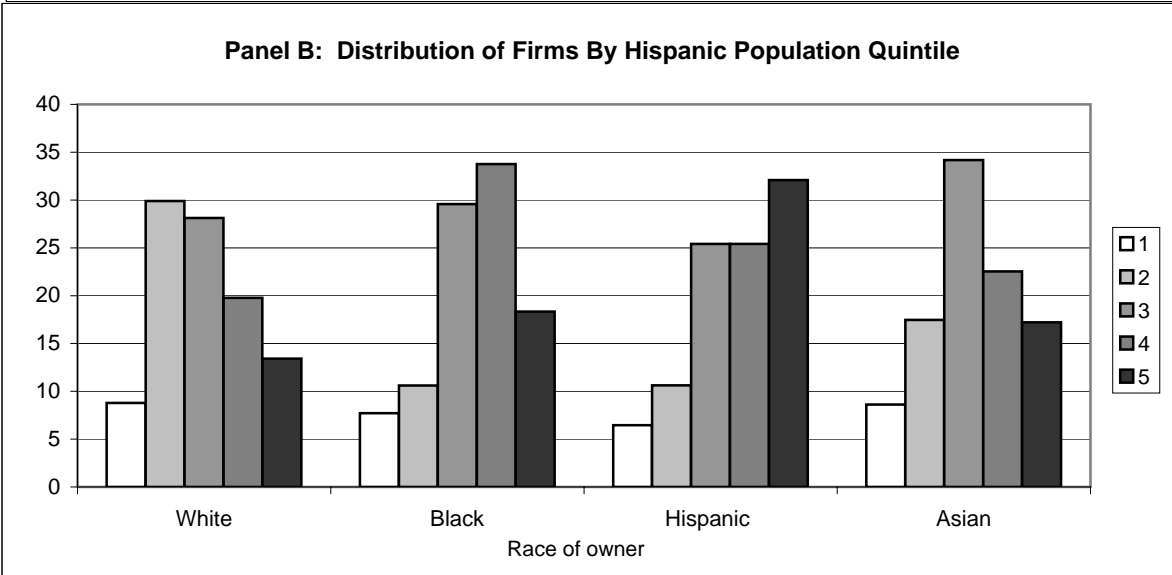
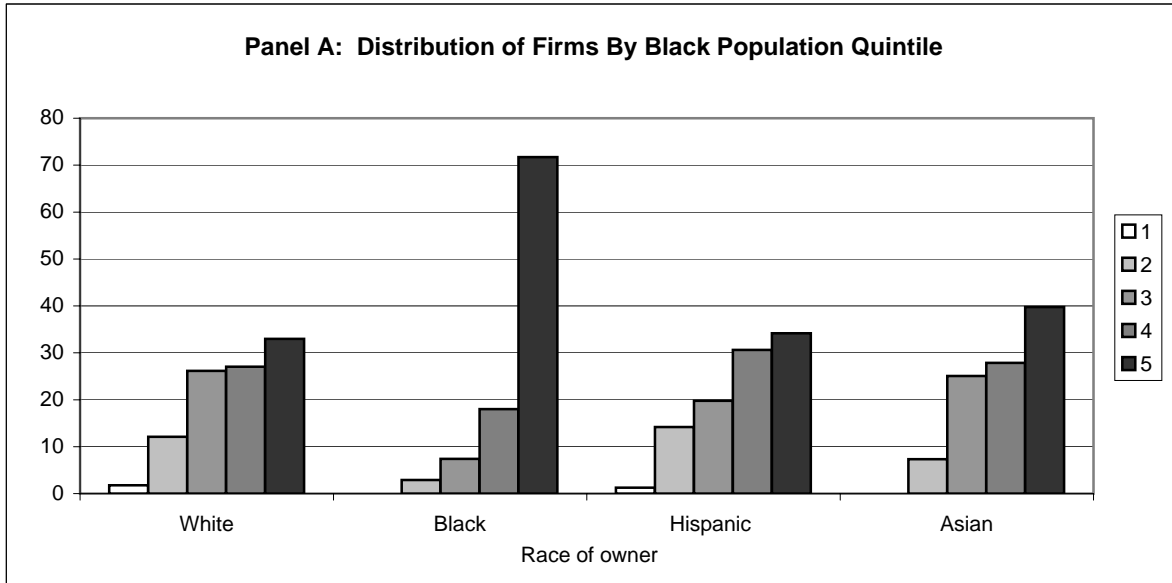


Table 1: DBE Goals And Utilization Across States

	(1) 1983-1987	(2) 1988-1993	(3) 1994-1999	(4) Total
Total DBE Goal	12.01% (2.02)	11.68% (3.11)	11.43% (2.38)	11.65% (2.58)
MBE Goal	9.94% (1.37)			
WBE Goal	2.08% (1.26)			
Value of Contracts (millions)	198.43 (171.2)	236.73 (226.73)	302.9 (304.6)	248.8 (247.4)
MBE Awards (millions)	21.74 (19.8) [11.0%]	18.93 (25.1) [8.0%]	17.37 (25.2) [5.7%]	19.21 (23.75) [7.7%]
MBE Commitments (millions)		20.43 (26.4) [8.6%]	21.07 (28.8) [7.0%]	
WBE Awards (millions)	6.09 (6.8) [3.1%]	11.88 (12.3) [5.0%]	17.58 (18.6) [5.8%]	12.19 (14.6) [4.9%]
WBE Commitments (millions)		12.6 (12.6) [5.3%]	21.56 (22.2) [7.1%]	
State-years with 10% DBE Goal	68.0%	76.7%	75.7%	73.8%
State-years attaining goal	74.0%	76.0%	58.7%	69.3%

Standard deviations are in parentheses. The figure in brackets represents the fraction of the total awards. The average DBE, MBE, and WBE goals are calculated weighting by the dollar value of contract awards in the state.

Table 2: DBE Goals by State

	1984	1991	1999
AK	12	12	10
AL	11	10	10
AR	11	10	10
AZ	11.25	10	10
CA	16	20	10
CO	11	10	10
CT	10.5	10	12
DE	11	10	10
FL	12	10	10
GA	10.5	10	10
HI	19.5	18	10
IA	9.9	10	10
ID	10.4	10	10
IL	13.25	10	10
IN	13	10	10
KS	11.5	10	10
KY	13	11	11.5
LA	12	10	10
MA	10.5	11	11
MD	12	13	14
ME	10.4	10	10
MI	15	15	12
MN	12	10	10
MO	11	10	10
MS	12	10	10
MT	7.5	10	10
NC	11	10	10
ND	5.2	10	10
NE	10.7	10	10
NH	7.5	10	10
NJ	14	10	16
NM	10.4	11	13
NV	11	10	10
NY	12	17	13
OH	13	10	10
OK	13	10	10
OR	11	12	12.5
PA	12	10	10
RI	10.5	10	10
SC	10.15	10	10
SD	14	10	10
TN	10.6	10	10
TX	10.5	10	15
UT	10.1	10	10
VA	11	12	10
VT	8.5	10	10
WA	13	16	16
WI	13	10	10
WV	13	10	10
WY	5.5	10	10

Notes: The reported goal for 1984 is the sum of the state's MBE and WBE goal.

Table 3: State Panel Regression of DBE Utilization on Goals

Dependent variable: Percentage DBE Utilization

	(1)	(2)	(3)	(4)	(5)
DBE Goal %	0.904 (0.129)***	0.841 (0.106)***	0.934 (.232)***	0.431 (0.234)*	0.437 (0.229)*
Year effects	N	Y	Y	Y	Y
State Effects	N	N	Y	Y	Y
State specific time trends	N	N	N	Y	Y
Other controls	N	N	N	N	Y
R-squared	0.096	0.195	0.39	0.51	0.49
N	850	850	850	850	776

(***, **, *) indicates significance at the 99%, 95%, and 90% level respectively. Robust standard errors corrected for clustering by state are in parentheses. Other controls included in specification (5) are the minority unemployment rate, female unemployment rate, state GSP, and the party of state governor.

Table 4: Summary Statistics of Caltrans Construction Projects

	DBE Goal			Overall
	0%	1-10%	10-20%	
	(1)	(2)	(3)	(4)
Winning bid (000s)	466.6 (1095.8)	1437 (1817.3)	4088.7 (7230.7)	2611.8 (5214.2)
Final Payment	541.4 (1217.0)	1549.9 (1995.1)	4463.2 (8074.4)	2841.8 (5808.7)
DBE Goal	0	7.18% (1.41)	12.90% (2.23)	11.26% (3.49)
DBE Utilization (000s)	34.9 (85.7) [6.4%]	160.6 (315.8) [10.4%]	601.7 (1504.6) [13.5%]	357.8 (1059.9) [12.6%]
Engineer's Estimate (000s)	597.3 (1587.9)	1615.7 (2040.0)	4450.9 (8067.7)	2870.7 (5805.7)
Workdays	136.7 (288.1)	104.6 (112.6)	194.2 (206.2)	147.5 (176.2)
Number of Items	18.1 (11.4)	29.9 (18.0)	56.6 (43.2)	41.7 (34.7)
Number of subcontractors	2.69 (2.08)	4.39 (2.70)	6.52 (3.49)	5.32 (3.27)
N	39	658	584	1293

The DBE goal is weighted by the engineer's estimate when calculating the average. Final payment represents the payments made to the contractor inclusive of change orders. The numbers in brackets represent the percent of final payment to the contractor that is awarded to DBEs.

Table 5: DBE Utilization and Goals Across Projects

	OLS		First Stage		IV	
	(1)	(2)	(3)	(4)	(5)	(6)
DBE Goal	0.398 (0.065) ^{***}	0.409 (0.120) ^{***}			0.538 (0.186) ^{***}	0.535 (0.289) [*]
Other district goal			0.501 (0.047) ^{***}	0.384 (0.058) ^{***}		
Controls	N	Y	N	Y	N	Y
R2	0.04	0.10	0.084	0.402		
N	1264	1263	1264	1263	1264	1263

(^{***}, ^{**}, ^{*}) indicates significance at the 99%, 95%, and 90% level respectively. Robust standard errors corrected for clustering by state are in parentheses. Controls in columns (2), (4), and (6) include quadratic in number of items and number of workdays, the log of the engineer's estimate, month effects, work classification dummies, and a quadratic time trend. The dependent variable in columns (1), (2), (5), and (6) is DBE utilization as a fraction of payments to the contractor. Columns (3) and (4) present the first stage estimates with the DBE goal as the dependent variable.

Table 6: Caltrans DBE Firm Location by Racial Composition of Zip Code

Panel A: Percentage of Zip Code Black

	<20%	20-40%	40-60%	60-80%	>80%	# Firms
Black Firms	161	43	86	20	1	311
	51.8%	13.8%	27.7%	6.4%	0.3%	
Hispanic Firms	452	14	14	0	0	480
	94.2%	2.9%	2.9%	0.0%	0.0%	
Asian Firms	330	19	45	1	0	395
	83.5%	4.8%	11.4%	0.3%	0.0%	
White Female Firms	413	25	16	1	0	455
	90.8%	5.5%	3.5%	0.2%	0.0%	
# Firms	1356	101	161	22	1	1641
	82.6%	6.2%	9.8%	1.3%	0.1%	
Zip Codes	1593	48	17	5	1	
	95.7%	2.9%	1.0%	0.3%	0.1%	

Panel B: Percentage of Zip Code Hispanic

	<20%	20-40%	40-60%	60-80%	>80%	# Firms
Black Firms	138	96	62	12	3	311
	44.4%	30.9%	19.9%	3.9%	1.0%	
Hispanic Firms	192	126	77	60	25	480
	40.0%	26.3%	16.0%	12.5%	5.2%	
Asian Firms	226	92	42	29	6	395
	57.2%	23.3%	10.6%	7.3%	1.5%	
White Female Firms	282	106	44	17	6	455
	62.0%	23.3%	9.7%	3.7%	1.3%	
# Firms	838	420	225	118	40	1641
	51.1%	25.6%	13.7%	7.2%	2.4%	
Zip codes	958	352	177	116	61	
	57.6%	21.2%	10.6%	7.0%	3.7%	

Panel C: Percentage of Zip Code Asian

	<20%	20-40%	40-60%	60-80%	>80%	# Firms
Black Firms	242	61	7	1	0	311
	77.8%	19.6%	2.3%	0.3%	0.0%	
Hispanic Firms	421	42	17	0	0	480
	87.7%	8.8%	3.5%	0.0%	0.0%	
Asian Firms	247	111	32	5	0	395
	62.5%	28.1%	8.1%	1.3%	0.0%	
White Female Firms	382	68	5	0	0	455
	84.0%	14.9%	1.1%	0.0%	0.0%	
# Firms	1292	282	61	6	0	1641
	78.7%	17.2%	3.7%	0.4%	0.0%	
Zip Codes	1510	113	37	4	0	
	90.7%	6.8%	2.2%	0.2%	0.0%	

Table 7: Proposition 209 and the Number of Establishments

	(1)	(2)	(3)	(4)
Post-209*Black zip code	-0.038 (0.026)			-0.039 (0.027)
Post-209*Hispanic zip code		0.050 (0.028)*		0.061 (0.029)**
Post-209*Asian zip code			-0.080 (0.026)***	-0.077 (0.026)***
Log(Non-construction establishments)	0.068 (0.064)	0.079 (0.064)	0.074 (0.063)	0.076 (0.064)
Observations	4487	4487	4487	4487
R-squared	0.71	0.71	0.72	0.72

Panel B: Highway Construction Establishments > 0

Post-209*Black zip code	-0.028 (0.013)**			-0.026 (0.013)**
Post-209*Hispanic zip code		0.004 (0.012)		0.008 (0.012)
Post-209*Asian zip code			-0.025 (0.012)**	-0.021 (0.012)*
Log(Non-construction establishments)	0.083 (0.016)***	0.084 (0.016)***	0.085 (0.016)***	0.084 (0.016)***
Observations	13411	13411	13411	13411
R-squared	0.70	0.70	0.70	0.70

Panel C: Log Number of Construction Establishments

Post-209*Black zip code	-0.041 (0.009)***			-0.035 (0.009)***
Post-209*Hispanic zip code		-0.049 (0.010)***		-0.044 (0.010)***
Post-209*Asian zip code			-0.003 (0.008)	0.002 (0.008)
Log(Non-construction establishments)	0.466 (0.034)***	0.463 (0.034)***	0.468 (0.033)***	0.462 (0.034)***
Observations	13411	13411	13411	13411
R-squared	0.98	0.98	0.98	0.98

(***, **, *) indicates significance at the 99%, 95%, and 90% level respectively. Robust standard errors are in parentheses. Other controls include zip code fixed effects and year dummies. A Black zip code is defined as one falling in the fifth quintile of the Black population distribution. Hispanic and Asian zip codes are similarly defined.