Affirmative Action Programs and Business Ownership among Minorities and Women[1]

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Abstract

Affirmative action programs are commonly used as a means to level the playing field for minority- and women-owned firms in public procurement markets, and therefore may be a positive factor in business entry and survival. To the extent that affirmative action programs also apply to traditional labor markets, however, they may also alter the opportunity cost of starting a business. We utilize the elimination of affirmative action in California and Washington through voter initiatives to identify the effect of affirmative action on minority and female self-employment rates. We find some evidence of modest increases in self-employment among minorities and women in both California and Washington after the elimination of affirmative action. This suggests that eliminating affirmative action may have lowered the opportunity cost of starting a business by restricting opportunities in the traditional labor market.

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1 Introduction

Affirmative action programs are widely used in federal public procurement markets and by many states and local governments, and contracts awarded through these programs are a significant source of revenue for some firms owned by minorities and women. Many of the existing federal, state and local government programs were created in the late 1970s and 1980s to develop minority and women enterprise, counter the effects of past discrimination, and reduce unemployment among minorities in urban communities.[2] For the past two decades, however, state and local programs have been both judicially and legislatively challenged and in many cases dismantled (e.g. *Croson* 1989). Recent ballot initiatives in California and Washington have significantly curtailed the use of affirmative action in these states, and similar initiatives are under consideration in other states as well. Understanding the impact of affirmative action policies are therefore of considerable importance in the current policy debate.

In this paper, we estimate how business ownership rates of minorities and women changed in the wake of the elimination of affirmative action programs in California and Washington. There are two primary mechanisms through which affirmative action can affect the business ownership rate. First, affirmative action in procurement can lead to greater profits for incumbent and potential entrant disadvantaged business enterprises (DBEs) if it increases public purchases of goods and services from minority- and women-owned firms. The greater profits increase the likelihood of entry by potential entrants and reduce the likelihood of exit on the part of incumbent DBEs. This can occur either from encouraging the utilization of DBEs that are as productive as their white male counterparts but are not getting opportunities due to

[2] See Boston 1999 and JCPES 1994.

discrimination or network limitations[3], or by creating opportunities for DBEs who are not yet as cost-effective. Prime contractors are often required to allot a specified percentage of the total amount of government contracts to minority-owned subcontractors and suppliers (Rice 1991 and Myers 1997).

The second mechanism is through altering opportunities in the traditional labor market. Broadly-based affirmative action programs also affect the employment of minorities and women by state agencies and contractors. Myers (2007) in fact finds significant adverse employment effects following the elimination of affirmative action in California due to Proposition 209. Eliminating affirmative action therefore may limit employment opportunities along with procurement opportunities. Recent research indicates that reduced labor market opportunities can lead to entry into self-employment (see Krashinsky 2005, and Parker 2004 for example). Therefore, eliminating affirmative action programs that affect both employment and procurement can potentially have the counterintuitive effect of increasing the self-employment rate among minorities and women.

To estimate the impact of eliminating affirmative action on the self-employment rate, we use the natural experiment created by voter initiatives in California and Washington that eliminated the use of race or gender as criteria in public employment and contracting. The rates of minority business ownership before and after the elimination of the programs in California and Washington are compared. To control for time-varying factors affecting business ownership in California and Washington and for minorities and women in the United States, we employ a triple difference (DDD) estimator, which compares the self-employment rate of minorities and

[3] For evidence on blocked access to business networks, such as in construction, see Bates 1993, Feagin and Imani 1994, and Bates and Howell 1997.

women relative to white men in treatment versus non-treatment states before and after eliminating affirmative action.

Prior to Proposition 209 in California and Initiative 200 (I-200) in Washington, affirmative action applied broadly to public contracting, employment, and college admissions. Affirmative action was a common feature of the allocation of public contracts at all levels of government in both states,[4] and both states took affirmative action in state hiring. California's Proposition 209 was passed by voters in 1996, broadly implemented upon then-Governor Pete Wilson's executive order in March of 1998 requiring the cessation of its use.[5] Washington's Initiative 200 was passed by the voters towards the end of 1998 and was implemented in January of 1999.

Our findings indicate that self-employment rates among minorities and women were generally higher following the elimination of affirmative action, consistent with the idea that minorities and women may turn to self-employment in response to the reduced employment opportunities documented in Myers (2007). The positive effects on business ownership, however, are modest and disappear or reverse sign in some cases.

The self-employment of minorities and women is of considerable interest since self-employment traditionally has been one route of advancement for disadvantaged groups.[6]

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[4] Prior to the elimination of affirmative action, California set a goal for the annual participation of minority and women owned firms on state contracts. Washington did not set a statewide goal, though the use of affirmative action was commonplace in state agencies. For instance, the Department of Transportation set a goal for the participation of minority and women owned firms on highway construction contracts. Several localities in both states also used affirmative action in the allocation of public contracts.

[5] Proposition 209 was passed in June of 1996 and withstood a series of legal challenges in 1997. However, prior to Governor Wilson's executive order in March 1998, many state agencies continued to use race- and gender-conscious methods in the awarding of state contracts. For instance, the California Department of Transportation continued to set requirements for the participation of minority- and women-owned subcontractors on projects using state funds. (see Marion, 2009) We therefore use 1998 as the date of implementation in the analysis.

[6] We use the terms "self-employment" and "business ownership" synonymously in this paper. This

Minority firms are more likely to hire minorities, and it has been argued that promoting minority business growth may be a more effective method of reducing minority unemployment than overall economic and employment growth (Bates 1993, Boston 1999, 2006, and U.S. Census Bureau 1997). Minorities and women are often found to face discrimination in credit markets, which will tend to limit business formation among these individuals even when the return of the business exceeds the market borrowing rate (Blanchflower, Levine and Zimmerman 2003 and Cavalluzzo, Cavalluzzo and Wolken 2002). Low levels of personal wealth and liquidity constraints may also limit opportunities to start and operate successful minority businesses (Bates 1997, Fairlie 1999, and Fairlie and Robb 2008).[7]

Second, due to residential segregation, discrimination, and limited networks of employed friends and relatives, opportunities for traditional employment may be more limited for minorities and women. Self-employment is the primary alternative to the traditional labor market, and affirmative action may play an important role in creating business opportunities. Thus, racial disparities in business ownership may translate into broader income and wealth inequality (Bradford 2003). At the same time, self-employment due to limited opportunity in the traditional labor market may only further racial disparities in business outcomes, as unprepared unemployed persons try their hand at self-employment.

Billions of contract dollars are awarded annually to minority and women firms through affirmative action programs, and these programs are in some forms controversial both politically and judicially. However, relatively little is known about their effectiveness, and the sparse existing evidence is decidedly mixed. Myers and Chan (1996) examine New Jersey state

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follows the convention of the U.S. Census Bureau in defining self-employment as being "self-employed in own not incorporated or incorporated business, professional practice, or farm."

[7] Racial disparities in business ownership do not appear to be due to differences in preferences because African-Americans are found to be almost twice as likely as whites to attempt starting a business (Koellinger. P. and M. Minniti. 2006).

procurement contracts, finding that the implementation of set asides were unsuccessful at closing the award gap between minority and non-minority firms, while Marion (forthcoming) finds that affirmative action in the highway construction industry is successful at raising the utilization of minority-owned firms while impacting little the utilization of women-owned firms. In addition, these programs may raise the cost of public procurement (Marion, 2009). The literature is also mixed regarding the success of these programs in increasing minority entrepreneurship. While Chatterji, Chay, and Fairlie (2007) find positive effects of affirmative action on rates of minority entrepreneurship, Blanchflower and Wainwright (2004) find little impact of affirmative action for minority entrepreneurship, though business ownership rates among white women may be positively impacted. Bates and Williams (1996) find that affirmative action programs may lead minority-owned firms to overextend themselves, leading to lower business success, yet Bates and Williams (1993) find that black-owned businesses located in cities with black mayors are more successful than those located in other cities. Finally, the previous literature does not examine the effects of broadly-based affirmative action programs that target both public employment and procurement on minority self-employment.

The rest of the paper proceeds as follows. In Section 2, we describe the data we use. In Section 3, we discuss the statistical methods used to identify the effect of affirmative action, and in Section 4 we present the results regarding self-employment rates. Section 6 concludes.

2 Data

We use data from the 1990 to 2006 Current Population Survey (CPS) Outgoing Rotation Group (ORG) files. These surveys, conducted annually by the U.S. Bureau of the Census and the Bureau of Labor Statistics, are representative of the entire U.S. population. The ORG files

contain annual samples that are roughly three times larger than those from a monthly CPS, such as the commonly used March Annual Demographic Files. The CPS is the only dataset large enough to allow for examining trends in self-employment for minority groups at the state level. Combining the 1990 to 2006 CPS data we have observations for more than 4 million individuals.[8]

Self-employed workers are defined as those individuals who identify themselves on the class of worker question as self-employed in their own not incorporated or incorporated business.[9] The ownership of both non-employer and employer firms is captured. The class of worker question refers to the job at which the respondent worked the most hours during the reference week. As a result, one potential concern with this measure of self-employment is that some respondents may be both simultaneously self-employed and employed in the traditional labor market. If an individual with such simultaneous employment suffers a sufficient drop in hours in their traditional job, her class of work could switch to self-employment. Therefore, any factor that lowers traditional employment could lead to an increase in the measured self-employment rate, even with no change in the actual rate of self-employment. In our paper, we consider a change in affirmative action policy that alters the returns both to self-employment and traditional employment, so it is possible for this type of mismeasurement to either bias up or down the estimated effect of affirmative action in our design. However, this will only

[8] We do not examine transitions into and out of self-employment using matched annual CPS data because of the resulting reduction in sample size. Match rates for the ORG files range from 55 to 60 percent, and matching is problematic or impossible with the 1993, 1994 and 1995 waves. Also, conditioning on self-employment in the first survey year, which is necessary for estimating exit rates, results in a further reduction in the sample size of roughly 90 percent. Finally, the effects of eliminating affirmative action are likely to work in same direction on entry and survival, which determine the self-employment rate, suggesting that the effects on the self-employment rate represents a good summary measure.

[9] Unpaid family workers are not counted as self-employed.

significantly bias our results if self-employment as secondary employment is empirically significant. However, Headd (2005) finds that such cases are uncommon.

We restrict the sample to include only individuals ages 20 to 64 to lessen concerns regarding retirement decisions. Unlike business-level datasets, the individual-level CPS includes information on non-business owners allowing us to directly measure business ownership rates. The CPS also includes detailed demographic and geographic information that is used to control for the determinants of business ownership.

The triple-difference approach we take to examine the effect of eliminating affirmative action on this measure of self-employment status requires classifying individuals along three dimensions. First, we are interested in comparing outcomes for minorities and women with those of white men. We therefore classify individuals along eight race/gender categories: white, black, Latino, and other minority men; and white, black, Latino, and other minority women. The other minority category includes Asian/Pacific Islander, Native American, and other races. We also classify individuals by state of residence to separately compare the treated states, California and Washington, with similar control states that did not change affirmative action policy. Finally, we classify observations into the pre-affirmative action period and the post-affirmative action period.

3 Methods

To estimate the effects of eliminating affirmation action programs in California and Washington, we take a triple difference approach, comparing the self-employment rate of minorities and women with white men before and after the elimination of affirmative action for

California and Washington relative to the rest of the United States.[10] The basic equation estimated for the self-employment probability is the following:

$$(1)\ Y_{ist} = \gamma_0 + \gamma_1 I_{CA} + \gamma_2 P_{98} + \gamma_3 D + \gamma_4 I_{CA}*P_{98} + \gamma_5 D*I_{CA} + \gamma_6 D*P_{98} + \gamma_7 D*I_{CA}*P_{98} + \varepsilon_{ist},$$

where D is an indicator for a minority or female individual, P_{98} indicates post 1998, and $I_{CA}=1$ if the observation is for California. There are also similar terms for Washington, which have been suppressed here for convenience. The coefficient of interest is γ_7 as it captures the change in the minority and female business ownership rate after controlling for national trends, minority trends, and California and Washington trends in business ownership.

We also extend the basic specification shown in (1) in several dimensions. First, we include a full set of state effects, α_s, and year effects λ_t:

$$(2)\ Y_{ist} = \alpha_s + \lambda_t + \gamma_3 D + \gamma_4 I_{CA}*P_{98} + \gamma_5 D*I_{CA} + \gamma_6 D*P_{98} + \gamma_7 D*I_{CA}*P_{98} + \beta' X_{ist} + \varepsilon_{ist}.$$

The vector of controls, X_{ist}, includes age, education, marital status, and urban status. To allow for a richer set of controls for national trends in minority entrepreneurship, we also allow the year fixed effects, λ_t, to depend on race. More importantly, a concern with the specification described in (2) is the possibility of pre-existing trends in minority business ownership specific to California and Washington. If business ownership rates among minorities and women were trending upward in California and Washington prior to the elimination of affirmative action, then

[10] This is similar to the approach used in Myers (2007), who estimated the employment effects of Proposition 209 using a DDD specification in a probit model.

our estimate of γ_7 is likely to be biased upward. To address this concern, we estimate a specification that allows for separate race-specific year effects for California and Washington.

Our basic estimates combine minorities and women into one treatment group, though it is possible that the effect of affirmative action differs across racial/gender groups. Therefore, we will also estimate specifications that allow the coefficient γ_7 to differ across specific race-gender groups in California and Washington. We also recognize that factors influencing the self-employment decision are likely to differ in particular for men versus women. We therefore also estimate specification (1) restricting the sample to men.

Comparison Group States

The choice of comparison group states included in the sample is important because the included states identify the national trends in minority business ownership rates. We estimate the model with two sets of control states. First, we estimate the model including all states, and in doing so we compare trends in California and Washington relative to the rest of the United States. Second, we define a more refined control group by identifying states that have similar minority compositions as California and Washington. We choose the 15 states closest in minority population shares to California and Washington, which are reported in Appendix 1.

4 Results

4.1 Basic Triple-Difference Results

We begin by presenting mean self-employment rates for women and minority men in California and Washington before and after the elimination of affirmative action in Table 1, where the self-employment rate is defined as the percent of population ages 20-64 that is a self-

employed business owner. From these means, we form the DDD estimates that represent the primary results of the paper. While these estimates are not regression adjusted for other covariates, they serve several purposes. Presenting the mean self-employment rates facilitates evaluating the magnitude of the estimated effects. Also, it describes some basic trends in the self-employment gap between white men and minorities/women, as well as serving to illustrate the identification strategy used in the paper.

In Panel A of Table 1, we present the results for California. Self-employment rates for minorities and women in California are 6.8 percent pre-affirmative action, well below the 16.7 percent rate for white men. This represents a 10.1 percentage point gap in the self-employment rate in the years 1990-1997. After the elimination of affirmative action, this gap falls by 1.9 percentage points. The decline in the gap resulted from a small increase in the self-employment rate of minorities and women and a far more substantial fall in the self-employment rate of white men.

A similar pattern played out in the rest of the United States as well. Self-employment of minorities and women increased by a modest amount (and was essentially unchanged), and the self-employment rate of white men fell noticeably. Like California, the gap between the self-employment rate of white men and that of minorities and women fell in the pre-1998 period to the post-1998 period in the rest of the United States as well, however it narrowed at a slower rate. Taken together, the self-employment rate grew 0.65 percentage points faster for minority men and women in California than for minorities and women in the rest of the United States. This represents an increase of less than ten percent in the self-employment rate.

Panel B of Table 1 presents similar estimates for Washington. While the white male self-employment rate in California is noticeably higher than that for the U.S., the self-employment

rate of working age white men in Washington closely resembled that for the rest of the U.S. prior to Washington's elimination of affirmative action in 1999. The gap between white self-employment and minority/female self-employment is correspondingly much lower in Washington than in California. The gap is 6.1 percentage points pre-1999 and is actually narrower than the 8.0 percentage point gap in the U.S. The Washington gap shrinks further in the post-affirmative action period to 4.5 percentage points, faster than the 1.2 percentage point decline in the rest of the U.S. The effect of eliminating affirmative action on the self-employment rate of minorities and women in Washington is therefore estimated to be 0.4 percentage points.

The results shown in Table 1 present a similar narrative for California and Washington. Both of these states experienced a decline in self-employment in the post-affirmative action period relative to the rest of the U.S. The decline in self-employment among minorities and women was smaller. This may be due to the positive effects of eliminating affirmative action on self-employment outweighing the negative effects.

4.2 Regression Results from Full sample of states

In Table 2 we present the results of estimating equations (1) and (2) for the full sample of states. In column (1), the estimates of γ_7 are presented for California and Washington without detailed controls. Because this is virtually equivalent to the exercise shown in Table 1, we do not discuss these results in detail. The estimates indicate that minority/female self-employment rates were slightly higher in California and Washington post affirmative action. In the specifications shown in subsequent columns, we gradually add demographic controls, state and year fixed effects, race/gender specific year effects, and race/gender specific time trends for

California and Washington. For all specifications, we estimate robust standard errors that adjust for clustering at the state level.

In the specification shown in column (2), we add demographic controls, state fixed effects, and year effects, and in the specification displayed in column (3) we further add race-gender year effects. Appendix 2 reports means for the demographic controls. These additional controls have little effect on the estimated coefficients. For both California and Washington, the effect of eliminating affirmative action is estimated to be of the same sign and virtually the same magnitude as the specification without controls shown in column (1).

One concern with a triple-difference estimator is that there might exist a preexisting trend specific to the treatment group. To address this concern, we estimate a specification including California and Washington time trends that are allowed to differ for minority and women versus white men. These state- and race-specific time trends are meant to capture pre-existing trends affecting minorities and women in the treatment states. Without these controls, the presence of unobserved factors that influence self-employment over time specifically for minorities living in California or Washington will lead to biased estimates of the DDD coefficient. While the estimates of γ_7 are somewhat larger in this specification, including these time trends does not qualitatively change the results. Relative self-employment rates rose for minorities and women after eliminating affirmative action in California and Washington.

Additional Estimates

We estimate a few additional specifications to check the robustness of these results. First, we examine whether the estimates are sensitive to including years around the initiatives. There might be anticipation effects and implementation delays that could create ambiguity over

when affirmative action ended. We exclude the initiative years 1998 and 1999 to examine this question. We find that the estimates do not differ substantially when these are excluded. Second, we are concerned about including years that are either much earlier or much later than the initiatives. We limit the sample period to 1992 to 2004 to address this concern. We find that focusing in on the initiative dates also does not change the results. Finally, we limit the sample to ages 20-54. We are concerned that individuals close to retirement age may behave differently. The results are also similar. Overall, the estimates are not overly sensitive to alternative time periods and age groups.

4.3 Restricting the comparison group states

The estimated specifications presented in Section 4.2 indicate that the likelihood of self-employment for minorities and women was higher in California and Washington than it would have been had these states kept affirmative action. The estimation strategy leading to this conclusion assumes that the change in self-employment rates for minorities and women relative to white men in California and Washington would mimic the change observed in the rest of the U.S had affirmative action not been eliminated. Individuals in other states are treated as a counterfactual for individuals in California and Washington. However, the pattern observed in other states may not always provide an accurate counterfactual, as some states differ dramatically from California and Washington.

The racial composition of a state's population is one characteristic likely to affect outcomes for minority- and women-owned firms. In this section, we use only states with similar demographic characteristics as California and Washington, where we select comparison states based on the minority share of the population. This comparison group may provide a more

accurate representation of how the likelihood of self-employment would have changed had California and Washington kept affirmative action.

California Comparison Group

We begin by restricting the sample of states to California and the fifteen states whose minority population share is closest to that of California (see Appendix 1). We present the results of estimating equations (1) and (2) for this sample in Table 3. Restricting the sample in this manner has very little impact on the results. We still see a modest increase in the self-employment rate for minorities and women relative to white men in California versus the rest of the U.S. These results are robust to the inclusion of state effects, year effects, demographic controls, and race/gender year effects, which we include in the specifications shown in columns (2) and (3). Including a minority/female time trend specific to California in column (4) we find a statistically insignificant coefficent. We do not find evidence in this specification of an increase in minority/female self-employment after eliminating affirmative action.

Washington comparison group

We next perform a similar exercise of identifying a more demographically similar set of control states for Washington. In Table 4 we present the results from restricting the sample to individuals in Washington and the fifteen states most closely matching its minority population share. Unlike the specification using the full sample of states, the estimates in columns (1)-(3) indicate a negative effect of eliminating affirmative action. However, this seems to be due to pre-existing trends. Once a Washington specific time trend for minorities and women is included, the estimated DDD coefficient is positive and of similar magnitude to that estimated

for California. The basic conclusion remains – eliminating affirmative action has a small positive effect on self-employment rates.

4.3 Minority Male Estimates

The decision to enter self-employment is likely to differ significantly between men and women, and affirmative action may differentially affect men and women. Men and women differ in the types of businesses they start and in the labor market opportunities that they face (U.S. Census Bureau 2007). They also are likely to differ in their elasticity with respect to changes in business or employment opportunities. In Table 5, we display estimates of a model that considers only the male self-employment rate. In this case, we compare minority men to white men. Interestingly, the focus on men somewhat changes the conclusions regarding the effect of affirmative action. We see the estimated effect of ending affirmative action is much smaller for men than was estimated for the sample as a whole. In California, once covariates, state effects, and year effects are added to the model, the triple difference coefficient is very small and statistically insignificant. Only upon the inclusion of minority time trends specific to California does the estimated coefficient become statistically significant, and it is still smaller than that estimated off of the entire sample. While the estimated effect of ending affirmative action is estimated to be merely smaller for men in California, we estimate that in Washington the effect of ending affirmative action actually has a negative impact on the self-employment rate of minority men. We find that the self-employment rate of minority men in Washington fell between 0.3 and 0.5 percentage points, depending on the included controls, relative to white men in Washington, as compared to the rest of the U.S.

4.4 Alternative definitions for self-employment

The previous subsections examine the self-employment rates of minorities and women, categorizing as self-employed those who listed self-employment as their primary occupation in the CPS. We do not impose restrictions on working. One criticism of this measure is that it may overstate true self-employment if some individuals who are in fact unemployed list self-employment as their occupation. To address this, we restrict our definition of self-employment to include only those individuals reporting themselves as self-employed who worked a significant number of hours. We will first consider self-employed only those individuals working at least 15 hours in the past week, and in a second robustness check we will categorize only those working more than 30 hours worked as self-employed.

The results are presented in Table 6. In column 1, we reproduce the estimates from the specification including the full set of controls as shown in the last column of Table 2. In column 2, we present the results where only those with greater than 15 hours worked in the past survey week are counted as self-employed. We see that the results are qualitatively similar between the two specifications. The estimated coefficients are also generally of similar magnitude as in the base specification using the broader measure of self-employment. Column 3 presents the results of further narrowing the definition of self-employment to those reporting working 30 or more hours of work in the past week. Again, the results are similar to those using the broader self-employment measure. Our main results are thus not sensitive to definition of self-employment used.

4.5 By race/gender group

We next examine how the elimination of affirmative action affected the self-employment rates of specific race/gender groups. In Table 7 we present the results of estimating equations (1) and (2) for the full sample of states, where γ_7 is allowed to vary for each race and gender. The previous results combine all groups, which may mask heterogeneity in the response of self-employment across race/gender groups. However, by disaggregating into relatively narrow treatment groups, we may become subject to the multiple inference problem.

In column (1), we present basic results with no demographic controls. In California, we find statistically significant increases in self-employment post-1998 for white women, Latino men and women, other minority men and women, and black women. We estimate a statistically significant decline for black men. For Washington, we estimate statistically significant increases in the self-employment rate post-1999 for black and Latino men, and white, black, and Latino women. We also find a statistically significant decline in self-employment among other minority men, and a statistically insignificant change in the self-employment rate of other minority women.

In the specification shown in column (2), we add demographic controls, state fixed effects, and year effects, and in the specification displayed in column (3) we further add race-gender year effects. These additional controls have little effect on the estimated coefficients. For each race-gender group in both California and Washington, the effect of eliminating affirmative action is estimated to be of the same sign and virtually the same magnitude as the specification without controls shown in column (1).

In column (4), we present estimates of a similar specification including time trends that are allowed to vary for each race and gender category separately for California and Washington. Including these controls does not change the results for most race and gender groups, though the

estimates are larger in many cases. Importantly, the inclusion of race- and state-specific time trends has a noticeable effect on the DDD estimates for black men in both California and Washington. As the prior results showed, self-employment among black men was lower after affirmative action in California. However, relative to their trend, black men in California are estimated to be 0.8 percentage points more likely to be self-employed post-Proposition 209. This implies that the self-employment rate of black men in California was trending downward even prior to the elimination of affirmative action. The opposite conclusion can be drawn for black men in Washington. Adding the race- and Washington-specific time trend turns the coefficient for black men from strongly positive to statistically indistinguishable from zero, indicating that self-employment among blacks in Washington was trending upward prior to Initiative 200.

6 Conclusion

In this paper, the self-employment response of individuals in California and Washington to the elimination of affirmative action is documented. Eliminating affirmative action appears to have resulted in a modest increase in self-employment among minorities and women based on our DDD results. This estimated increase is robust to controls for race-state time trends, alternative definitions of self-employment, restricting the age range of the sample, and allowing for the possibility of delayed implementation of the elimination of affirmative action. However, not all of the results that we present indicate an increase in minority/female self-employment following the elimination of affirmative action. In particular, when we create more similar sets of comparison states for California and Washington we find very small and statistically insignificant estimates and negative estimates in some cases. A similar weakening of the overall conclusions occurs when we focus the analysis on minority and white men. We also find some

negative estimates for specific race/gender groups. Although it is difficult to pinpoint the causes of these divergent results it leaves open the possibility that the potentially negative effects of eliminating affirmative action on public contracting opportunities outweighs the potentially positive effects on self-employment through restricted government employment opportunities for some groups.

The increase in self-employment we document in our primary specifications may have occurred because the elimination of broadly-based affirmative action programs reduced the employment opportunities of minorities and women, forcing them to turn to self-employment. Previous research indicates large negative employment effects following the elimination of affirmative action in California (Myers, 2007; Discrimination Research Center and Equal Rights Advocates, 2004). Further research on the impacts of eliminating broader state affirmative action programs could investigate this channel by distinguishing between different types of self-employed business ownership. The elimination of affirmative action in California and Washington may have resulted in an increase in low-income self-employment for many minorities, but it may have also resulted in a decrease in high-income self-employment for minorities. Unfortunately, the CPS ORG files do not provide information on the earnings or number of employees of self-employed business owners allowing one to identify potentially divergent patterns. One possibility for future research is to use confidential and restricted-access data from the Census Bureau on minority-owned businesses. The Census Bureau is working on methods of matching the Survey of Business Owners (SBO) data which has information on the race of the owner with longitudinal business-level data which has information on revenues and employment. Although future research is needed on this important topic, this study represents

the first step towards understanding the effects of broadly-based affirmative action programs on minority and female self-employment.

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Appendix 1
Comparison States by Minority Share of Population
Census 2000

State	Total Population	Minority Percent	Black Percent	Latino Percent	Min. Share States
Alabama	4,447,100	29.7	26.0	1.7	
Alaska	626,932	32.4	3.5	4.1	CA
Arizona	5,130,632	36.2	3.1	25.3	CA
Arkansas	2,673,400	21.4	15.7	3.2	WA
California	33,871,648	53.3	6.7	32.4	CA
Colorado	4,301,261	25.5	3.8	17.1	WA
Connecticut	3,405,565	22.5	9.1	9.4	WA
Delaware	783,600	27.5	19.2	4.8	WA
District of Columbia	572,059	72.2	60.0	7.9	
Florida	15,982,378	34.6	14.6	16.8	CA
Georgia	8,186,453	37.4	28.7	5.3	CA
Hawaii	1,211,537	77.1	1.8	7.2	
Idaho	1,293,953	12.0	0.4	7.9	
Illinois	12,419,293	32.2	15.1	12.3	CA
Indiana	6,080,485	14.2	8.4	3.5	
Iowa	2,926,324	7.4	2.1	2.8	
Kansas	2,688,418	16.9	5.7	7.0	WA
Kentucky	4,041,769	10.7	7.3	1.5	
Louisiana	4,468,976	37.5	32.5	2.4	CA
Maine	1,274,923	3.5	0.5	0.7	
Maryland	5,296,486	37.9	27.9	4.3	CA
Massachusetts	6,349,097	18.1	5.4	6.8	WA
Michigan	9,938,444	21.4	14.2	3.3	WA
Minnesota	4,919,479	11.8	3.5	2.9	
Mississippi	2,844,658	39.3	36.3	1.4	CA
Missouri	5,595,211	16.2	11.2	2.1	WA
Montana	902,195	10.5	0.3	2.0	
Nebraska	1,711,263	12.7	4.0	5.5	
Nevada	1,998,257	34.8	6.8	19.7	CA
New Hampshire	1,235,786	4.9	0.7	1.7	
New Jersey	8,414,350	34.0	13.6	13.3	CA
New Mexico	1,819,046	55.3	1.9	42.1	CA
New York	18,976,457	38.0	15.9	15.1	CA
North Carolina	8,049,313	29.8	21.6	4.7	
North Dakota	642,200	8.3	0.6	1.2	
Ohio	11,353,140	16.0	11.5	1.9	WA
Oklahoma	3,450,654	25.9	7.6	5.2	WA
Oregon	3,421,399	16.5	1.6	8.0	WA
Pennsylvania	12,281,054	15.9	10.0	3.2	WA
Rhode Island	1,048,319	18.1	4.5	8.7	WA
South Carolina	4,012,012	33.9	29.5	2.4	CA
South Dakota	754,844	12.0	0.6	1.4	
Tennessee	5,689,283	20.8	16.4	2.2	WA
Texas	20,851,820	47.6	11.5	32.0	CA
Utah	2,233,169	14.7	0.8	9.0	WA
Vermont	608,827	3.8	0.5	0.9	
Virginia	7,078,515	29.8	19.6	4.7	CA
Washington	5,894,121	21.1	3.2	7.5	WA
West Virignia	1,808,344	5.4	3.2	0.7	
Wisconsin	5,363,675	12.7	5.7	3.6	
Wyoming	493,782	11.1	0.8	6.4	

Notes: (1) Estimates of minority share of the total population are from the 2000 Census. (2) See text for more details on selection of minority share and affirmative action progam comparison states for California and Washington.

Appendix 2
Means of Analysis Variables
CPS (1990-2006)

	Total	California	Washington
Self-employment rate	8.4%	9.2%	9.3%
Age	39.9	39.2	40.0
Age squared / 100	17.4	16.8	17.4
High school graduate	33.5%	25.1%	29.9%
Some college	27.5%	29.9%	33.8%
College graduate	25.1%	26.5%	27.6%
Married	59.8%	56.8%	60.1%
Previously married	16.4%	16.3%	17.6%
Non-central city	41.0%	52.8%	40.6%
Rural	18.4%	2.0%	17.9%
Not identified C.C. status	15.8%	7.7%	20.0%
Male black	5.4%	3.0%	1.5%
Male Latino	5.6%	14.6%	2.5%
Male other minority	2.4%	6.3%	3.8%
Female white	36.5%	26.1%	42.5%
Female black	6.6%	3.4%	1.4%
Female Latino	5.3%	13.7%	2.2%
Female other minority	2.6%	6.9%	4.3%
Sample size	4,267,176	335,955	60,814

Note: The sample consists of individuals (ages 20-64).

Table 1: Business Ownership Trends in States Eliminating Affirmative Action Versus Rest of US
Current Population Survey (1990-2006)

Panel A: California vs. rest of US (except WA)

	Before 1998	After 1998
California		
White men	0.1695	0.1520
Minority/female	0.0678	0.0694
Diff	-0.1017	-0.0827
	(0.0020)	(0.0020)
DD	0.0190	
	(0.0026)	
US		
White men	0.1345	0.1233
Minority/female	0.0541	0.0554
Diff	-0.0804	-0.0679
	(0.0027)	(0.0020)
DD	0.0125	
	(0.0012)	
DDD	0.0065	
	(0.0012)	

Panel B: Washington vs. rest of US (except CA)

	Before 1999	After 1999
Washington		
White men	0.1324	0.1135
Minority/female	0.0717	0.0686
Diff	-0.0606	-0.0449
	(0.0037)	(0.0034)
DD	0.0158	
	(0.0050)	
US		
White men	0.1339	0.1226
Minority/female	0.0544	0.0552
Diff	-0.0795	-0.0674
	(0.0026)	(0.0020)
DD	0.0121	
	(0.0012)	
DDD	0.0036	
	(0.0012)	

Notes: (1) The sample includes all individuals ages 20-64. (2) U.S. estimates exclude California and Washington.

Table 2
Linear Probablity Regressions for Business Ownership -- U.S. Sample
CPS (1990-2006)

Explanatory variables	(1)	(2)	(3)	(4)
D*California*Post 1998	0.006521	0.005572	0.005502	0.01297
	(0.00122)	(0.00125)	(0.00125)	(0.00130)
D*Washington*Post 1999	0.003551	0.004102	0.004267	0.015104
	(0.00117)	(0.00117)	(0.00116)	(0.00152)
Demographic controls	No	Yes	Yes	Yes
State fixed effects	No	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	Yes
Race/gender year fixed effects	No	No	Yes	Yes
Race/gender CA and WA time trends	No	No	No	Yes
Mean of dependent variable	0.089043	0.089043	0.089043	0.089043
Sample size	4267176	4267176	4267176	4267176

Notes: (1) Displayed are triple difference coefficients representing the change in the self-employment rate after the elimination of affirmative action for minorities and women, represented by the treatment variable D, relative to white males in the treatment state versus the rest of the United States. (2) The sample consists of individuals (ages 20-64). (3) Demographic controls include age, education, marital status, and urban status. (4) Standard errors are adjusted for clustering at the state level.

Table 3
Linear Probablity Regressions for Business Ownership -- CA Sample Based on Minority Share
CPS (1990-2006)

Explanatory variables	(1)	(2)	(3)	(4)
D*California*Post 1998	0.0056	0.0043	0.0043	0.0025
	(0.0013)	(0.0013)	(0.0013)	(0.0019)
Demographic controls	No	Yes	Yes	Yes
State fixed effects	No	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	Yes
Race/gender year fixed effects	No	No	Yes	Yes
Race/gender CA time trends	No	No	No	Yes
Mean of dependent variable	0.089043	0.089043	0.089043	0.089043
Sample size	4267176	4267176	4267176	4267176

Notes: (1) Displayed are triple difference coefficients representing the change in the self-employment rate after the elimination of affirmative action for minorities and women, represented by the treatment variable D, relative to white males in the treatment state versus the fifteen states with minority population share most similar to California. (2) The sample consists of individuals (ages 20-64). (3) Demographic controls include age, education, marital status, and urban status. (4) Standard errors are adjusted for clustering at the state level.

Table 4
Linear Probablity Regressions for Business Ownership -- WA Sample Based on Minority Share
CPS (1990-2006)

Explanatory variables	(1)	(2)	(3)	(4)
D*Washington*Post 1999	-0.0035	-0.0021	-0.0020	0.0023
	(0.0010)	(0.0010)	(0.0010)	(0.0014)
Demographic controls	No	Yes	Yes	Yes
State fixed effects	No	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	Yes
Race/gender year fixed effects	No	No	Yes	Yes
Race/gender WA time trends	No	No	No	Yes
Mean of dependent variable	0.089043	0.089043	0.089043	0.089043
Sample size	4267176	4267176	4267176	4267176

Notes: (1) Displayed are triple difference coefficients representing the change in the self-employment rate after the elimination of affirmative action for minorities and women, represented by the treatment variable D, relative to white males in the treatment state versus the fifteen states with minority population share most similar to Washington. (2) The sample consists of individuals (ages 20-64). (3) Demographic controls include age, education, marital status, and urban status. (4) Standard errors are adjusted for clustering at the state level.

Table 5
Linear Probablity Regressions for Business Ownership -- Only Men
CPS (1990-2006)

Explanatory variables	(1)	(2)	(3)	(4)
D*California*Post 1998	0.004655	0.001217	0.001257	0.010873
	(0.00178)	(0.00168)	(0.00168)	(0.00232)
D*Washington*Post 1998	-0.002743	-0.004778	-0.004775	-0.003332
	(0.00166)	(0.00151)	(0.00148)	(0.00195)
Demographic controls	No	Yes	Yes	Yes
State fixed effects	No	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	Yes
Race/gender year fixed effects	No	No	Yes	Yes
Race/gender CA and WA time trends	No	No	No	Yes
Mean of dependent variable	0.1225	0.1225	0.1225	0.1225
Sample size	2045890	2045890	2045890	2045890

Notes: (1) Displayed are triple difference coefficients representing the change in the self-employment rate after the elimination of affirmative action for minority men, represented by the treatment variable D, relative to white males in the treatment state versus the rest of the United States. (2) The sample consists of individuals (ages 20-64). (3) Demographic controls include age, education, marital status, and urban status. (4) Standard errors are adjusted for clustering at the state level.

Table 6
Linear Probability Regressions for Business Ownership -- Alternative Self-Employment Definitions
CPS (1990-2006)

	(1)	(2)	(3)
Definition of self-employment	Main	> 15 hours	> 30 hours
D*California*Post 1998	0.01297	0.009543	0.009946
	(0.00130)	(0.00134)	(0.00142)
D*Washington*Post 1998	0.015104	0.017218	0.018237
	(0.00152)	(0.00146)	(0.00151)
Demographic controls	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Race/gender year fixed effects	Yes	Yes	Yes
Race/gender CA and WA time trends	Yes	Yes	Yes
Mean of dependent variable	0.0890	0.0781	0.0684
Sample size	4267176	4267176	4267176

Notes: (1) Displayed are triple difference coefficients representing the change in the self-employment rate after the elimination of affirmative action for minorities and women, represented by the treatment variable D, relative to white males in the treatment state versus the rest of the United States. (2) The sample consists of individuals (ages 20-64). (3) Demographic controls include age, education, marital status, and urban status. (4) Standard errors are adjusted for clustering at the state level. (5) In the main specification, an individual is listed as self-employed if this was his or her primary form of employment. Two alternative definitions for self-employment are considered. In column 2, the definition of self-employment is restricted to those with self-employment as their primary form of employment, and who worked at least 15 hours in this primary job. In column 3, we increase this hours restriction to 30.

Table 7
Linear Probability Regressions for Business Ownership - U.S. Sample
CPS (1990-2006)

Explanatory Variables	(1)	(2)	(3)	(4)
Black Men California Post 1998	-0.00555	-0.00591	-0.00590	0.00807
	(0.00148)	(0.00160)	(0.00158)	(0.00357)
Latino Men California Post 1998	0.01208	0.00718	0.00737	0.00619
	(0.00454)	(0.00387)	(0.00396)	(0.00304)
Oth. Min. Men California Post 1998	0.00782	0.00640	0.00661	0.02292
	(0.00284)	(0.00291)	(0.00293)	(0.00431)
White Women California Post 1998	0.00767	0.00802	0.00782	0.01009
	(0.00123)	(0.00122)	(0.00121)	(0.00136)
Black Women California Post 1998	0.00973	0.00853	0.00841	0.01358
	(0.00167)	(0.00166)	(0.00167)	(0.00208)
Latino Women California Post 1998	0.00971	0.00708	0.00692	0.01542
	(0.00216)	(0.00162)	(0.00166)	(0.00271)
Oth.Min.Women California Post 1998	0.00654	0.00451	0.00452	0.01239
	(0.00292)	(0.00298)	(0.00299)	(0.00506)
Black Men Washington Post 2000	0.02279	0.02137	0.02156	-0.00202
	(0.00158)	(0.00165)	(0.00168)	(0.00237)
Latino Men Washington Post 2000	0.00883	0.00907	0.00951	0.01788
	(0.00399)	(0.00337)	(0.00337)	(0.00442)
Oth. Min. Men Washington Post 2000	-0.01079	-0.01341	-0.01358	-0.02544
	(0.00279)	(0.00288)	(0.00294)	(0.00384)
White Women Washington Post 2000	0.00274	0.00331	0.00353	0.00708
	(0.00107)	(0.00106)	(0.00105)	(0.00122)
Black Women Washington Post 2000	0.03572	0.03379	0.03385	0.03425
	(0.00154)	(0.00140)	(0.00142)	(0.00165)
Latino Women Washington Post 2000	0.01894	0.02120	0.02132	0.02393
	(0.00204)	(0.00158)	(0.00152)	(0.00197)
Oth.Min.Women Washington Post 2000	0.00066	-0.00319	-0.00306	-0.00126
	(0.00252)	(0.00252)	(0.00250)	(0.00347)
Demographic controls	No	Yes	Yes	Yes
State fixed effects	No	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	Yes
Race/gender year fixed effects	No	No	Yes	Yes
Race/gender CA and WA time trends	No	No	No	Yes
Mean of dependent variable	0.08904	0.08904	0.08904	0.08904
Sample size	4,267,176	4,267,176	4,267,176	4,267,176

Notes: (1) Displayed are triple difference coefficients representing the change in the self-employment rate after the elimination affirmative action for the stated minority group relative to white males in the treatment state versus the rest of the United States. (2) The sample consists of individuals (ages 20-64). (3) Demographic controls include age, education, marital status, and urban status.