THE IMPACT OF AFFIRMATIVE ACTION
ON EMPLOYMENT

Jonathan S. Leonard

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ABSTRACT

Affirmative action under Executive Order 11246 ranks
among the most controversial of domestic federal policies.
This study asks whether affirmative action has been successful
in promoting the employment of minorities and females. It
compares the change in demographics between 1974 and 1980
at more than sixty-eight thousand establishments, and finds
that both minority and female employment have increased faster
at establishments subject to affirmative action. Compliance
reviews, while not well targeted are also found to have been
effective.

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I. Introduction

Affirmative action, mandated by Executive Order 11246 in 1965, is one of the most controversial government interventions in the labor market since abolition.[1] While much has been said concerning the propriety of affirmative action in theory, little is known about the impact of affirmative action in practice. If affirmative action has not changed the employment patterns of non-whites and females, then much of the discussion since 1965 of its philosophical merits amounts to shadow-boxing. The goal of affirmative action is to increase employment opportunities for females and minorities. Has affirmative action been successful in achieving this goal? This paper will use a new set of rich establishment level data to examine the effects of being a federal contractor subject to the affirmative action obligation, and of undergoing a compliance review, on the employment of minorities and females.

The evidence to be presented in this paper indicates that affirmative action under the contract compliance program has led to improved employment opportunities for females and minorities. This result is based on a statistical comparison of the change in demographics at more than sixty-eight thousand establishments with more than 16 million employees between 1974 and 1980. I shall argue that minorities' and females' share of employment has increased more at establishments that are federal contractors, and so subject to affirmative action, than at non-contractors. Compliance reviews, while questionably targeted, will be shown to have been an effective regulatory tool in increasing black and female employment. I shall also draw implications for the relative wages of members of protected groups.

A model of affirmative action as a tax on the employment of white males is presented in the following section. Section III presents cross-tabulations and log-odds equations with multiple control variables comparing changes in the employment share of detailed demographic groups across contractor and non-contractor establishments. Have compliance reviews been a useful tool in the affirmative action effort? Many in

private business and in advocacy groups argue that compliance reviews generate a lot of paper, but little real change. To determine the efficacy of compliance reviews this section also compares changes in the representation of minorities and females across reviewed and non-reviewed contractor establishments.

A debate of major policy significance has been continuing between the view represented by Heckman and Butler, and that found in the work of Freeman, concerning the role played by the federal government in reducing racial economic inequality. Section IV discusses the impact of affirmative action in reducing racial inequality in earnings, followed by the conclusions of this research.

The findings to be presented here speak directly to those concerned with the position of minorities and females in our society, and with the role the federal government plays in improving their position. The single most certain aspect of affirmative action is that it is controversial. This study brings new evidence to bear on that controversy; evidence that can enlighten discussions both of discrimination in the United States, and of the impact of government regulation.

Past Studies

Past studies of affirmative action are divided into studies of the regulatory process that find it mortally flawed, and studies of impact that find it successful. The process studies by the U.S. Commission on Civil Rights, the General Accounting Office, and the House and Senate Committees on Labor and Public Welfare all conclude that affirmative action has been ineffective and blame weak enforcement and a reluctance to apply sanctions. That this is not merely politics can be judged from the fact that the Department of Labor has been sued with some measure of success more than once for failure to properly enforce affirmative action.[2] Debarment, the ultimate sanction, has been used only 26 times, with debarment of the first non-construction contractor not occurring until 1974. The GAO and USCCR have found that other forms of regulatory pressure such as pre-award reviews, delay of contract award, and withholding of

progress payments have not been forcefully and consistently pursued. However, as evidenced by the increased incidence of debarment and backpay awards, enforcement did become more aggressive after 1973.

In light of the unanimity of these process studies in finding the affirmative action regulatory mechanism seriously deficient, it is surprising that the few past econometric studies of the impact of affirmative action in its first years, by Burman, Ashenfelter and Heckman, Goldstein and Smith, and Heckman and Wolpin, all based on a comparison of EEO-1 forms by contractor status, have generally found significant evidence that it has been effective for black males. While these few studies of the initial years of affirmative action between 1966 and 1973 are not directly comparable because of differing specifications, samples, and periods, they do generally find that despite weak enforcement in its early years, and despite the ineffectiveness of compliance reviews, affirmative action was effective in increasing black male employment share in the contractor sector, but generally ineffective for other protected groups. This study will use a new set of highly disaggregated panel data to examine a more mature affirmative action program between 1974 and 1980, after the beginning of substantial enforcement of regulations barring sex discrimination, after the start of aggressive enforcement in the early seventies, and including the period after the major reorganization of the contract compliance agencies into the OFCCP in 1978.

II. A Tax Model of Affirmative Action

This section develops a two sector general equilibrium tax model that underlies most of the empirical work analyzing the effect of affirmative action. I model affirmative action as a tax on the employment of white males in the contractor sector. If these workers are immobile, they bear the tax burden and relative white male wages fall.

Assume the owner of the firm maximizes utility:

$$MAX \ U = T(F(m) - T(W_M)m - T(W_F)(1-m) - t(m - \overline{m}) - d(1-m) \tag{1}$$

where

T   = total employment

m   = proportion of white males in T

$\overline{m}$ = average proportion of white males employed in

     given industry and geographic area

W_M = wage of white males

W_F = wage of other workers

t   = tax on proportion male employment

d   = taste for discrimination against females and non-whites

F(.)   = a production function with $F' > 0, F'' < 0$.

Now abstracting from the scale effect by fixing T=1, the first order condition is:

$$F' = W_M - W_F + t - d \qquad (2)$$

from which we find:

$$m = g(W_M, W_F, t, d) \qquad (3)$$

Taxes in this model of affirmative action are symmetrical with tastes for discrimination in Becker's model. Intuitively, an increase in the affirmative action 'tax' shifts the demand curve for white male labor down.

I assume fixed tastes for discrimination and fixed technology, or less restrictively, technological change that is neither male nor female saving. Under these conditions, the change in demand is a function only of wages and the tax. The contractor firms that are liable for the tax are distributed throughout the economy, so all firms are assumed to be wage takers in the same labor market. I also assume that the wage elasticity of labor demand is the same in the contractor and non-contractor sectors. The difference between the change in the employment of males at contractor firms, Δm_C, and at non-contractor firms, Δm_{NC}, is then simply a function of affirmative action pressure.

$$\Delta m_C - \Delta m_{NC} = g(t) \tag{4}$$

This is the central equation to be tested. I will compare shifts in the proportional employment of members of protected groups across contractor and non-contractor establishments across time. The hypothesis is that if affirmative action has been ineffective, these employment shifts will be the same for contractors and non-contractors. An effective affirmative action program is expected to shift the demand curve for blacks in the contractor sector to the right, driving black wages up, increasing black employment in the contractor sector and decreasing it in the non-contractor sector. Tests of the employment effects are presented next, and the wage effects are discussed in Section IV. One might also expect affirmative action to lead to occupational upgrading, a possibility which is analyzed in other work. In reality, there are other policies, such as Title VII, promoting the employment of blacks in the non-contractor sector, so I will only measure the differential impact of affirmative action over and above the effects of general policies or changes in tastes.[3]

While this model has straightforward implications for changes in the employment of males and females, one cannot fully explain changes in relative wages without considering supply shifts. A finding that affirmative action has been effective in increasing female employment is consistent with an unchanging ratio of female to male wages if female labor supply has increased at the same time. Since any such supply shift will affect contractors and non-contractors alike, I isolate the impact of affirmative action on labor demand by comparing changes in employment across contractors and non-contractors.

In the above discussion I abstracted from scale effects, and as we shall see, these are usually unimportant. However, scale effects may lead to a striking reversal of changes in relative employment, obscuring the impact of affirmative action. The analysis in this case is analogous to that in 2-sector general equilibrium models of taxation or unionization. Consider the case in which the affirmative action tax is levied on the employment of males only in the contractor sector, which is male intensive.

Absent any scale effect, this leads to the substitution of females for males in the contractor sector. At the same time though, this tax increases costs in the contractor sector, depending upon the elasticity of substitution, and leads to a decline in the size of the contractor sector, depending on product demand elasticities. As the contractor sector shrinks it becomes even more male intensive, under the usual assumptions. If this scale effect is large, we may observe an increase in the ratio of males to females in both the contractor and non-contractor sectors because affirmative action has been effective in taxing male employment. This is an important paradox to consider in theory, but as we shall see, the differences in observed scale effects are in general negligible, so we may draw inferences concerning the effect of affirmative action by comparing what are in practice substitution effects.[4]

III. The Impact of Affirmative Action on the Employment of Minorities and Females

The male share of employment has fallen steadily since 1960 as females have flooded into the labor force. In 1974, .389 of the employed were female. By 1980 this had increased by 7.2% to .417. While the proportion of non-white males in total employment remained stable over this same period at .060, their proportion among males rose by 5%, from .098 to .103. On their face, these growth rates in representation are not strikingly higher after 1970 than before. At the same time, both females and non-white males share of unemployment has been growing, along with their employment shares. The period between 1974 and 1980 witnessed growth in females' share of employment, and in non-white males share of male employment. What part has affirmative action played in these increases?

We have seen that affirmative action may usefully be thought of as a tax on the employment of white males in the contractor sector, a tax that shifts the demand for white male labor down. If affirmative action is effective, then the rate of change of protected groups' employment share will be higher in contractor establishments than in non-contractor establishments, ceteris paribus. Since affirmative action goals are

similar within industry within region, the variance of employment share may be expected to fall more and remain lower at contractor firms, controlling for industry and region. In the long run, the levels of the employment shares of protected groups will be higher in contractor firms, controlling for industry and region which determine skill requirements and local labor supply, and are not controlled for in the following cross-tabulations. The crucial tests are those on changes in levels of employment shares which difference out unchanging variables. Since stocks are only susceptible to policy through changes in flows, I expect the flows, or in other words the change in stocks to be a more sensitive indicator of the impact of policy. It should also be noted that 1974 is an early year in the history of affirmative action, especially for females. While affirmative action became effective in 1965, the provisions pertaining to females were a later addition, first enforced about 1974. For both non-whites and females, the adjustment process was by no means over by 1974.

Comparison of Mean Changes in Employment Shares in the Contractor and Non-contractor Sectors

Table 1 shows that between 1974 and 1980 black and female employment shares increased significantly faster in contractor establishments than in non-contractor establishments. The appendix discusses the data on which the empirical tests discussed here are based. T-tests in Table 1 reject the equality of changes in means in all cases except non-black minorities, which are the smallest group. There is no striking evidence in the changes in variances in representation over time, but the variance in the contractor sector is always significantly less than in the non-contractor sector. Contractor establishments start with proportionately more non-white males but fewer females in 1974, which in itself casts doubt on the argument that female intensive establishments are being selected as contractors. The most compelling evidence of the impact of affirmative action in Table 1 is the significantly greater increases in female and black male employment shares in contractor establishments.[5]

The interpretation of tests of affirmative action would be less straightforward were scale effects to differ greatly across sectors. However we see in Table 4.1 that there is only a small difference in the growth rates of contractor and non-contractor establishments; both are growing at between 2 to 3 percent per year, so differences in scale effects across sectors are likely to be negligible. On net in these establishments members of protected groups are, in part, being substituted for white males over time. This also suggests that contractor firms are not growing fat on government largesse, allowing them to expand total employment to take on relatively unproductive minorities and females. This is consistent with evidence presented in other work that the productivity of members of protected groups relative to that of white males did not fall as their relative employment share increased.

Reviewed vs. Non-Reviewed

Given that contractor establishments have increased their employment of non-whites and females more than non-contractor firms have, what administrative tools have been useful? Do compliance reviews matter? One alternative is that the threat of a compliance review is sufficient to obtain the desired behavior, so that reviewed establishments do not differ significantly from non-reviewed contractor establishments. This would be plausible if the threatened penalty if caught were severe enough to outweigh the small probability of being caught. This is unlikely, because both the probability of review and the penalties imposed are not great. The OFCCP has records of at least 27,000 reviews completed between 1973 and 1981 at 11,000 different identifiable establishments. In 1980, roughly 115,000 establishments were government contractors, so at least ten percent of all contractor establishments had been reviewed between 1973 and 1981. Twenty-six of these reviews resulted in the ultimate penalty of debarment. Between 1969 and 1976, compliance reviews produced 331 conciliation agreements according to a Department of Justice memorandum. These agreements awarded $61,279,000 in back pay, or $185,133 per company in a heavily

skewed distribution. Short of debarment or backpay awards, affirmative action extracts only promises, though as we have seen, these promises are not empty.

Compliance reviews have been targeted at large establishments that already employ proportionately more non-whites. The economics of targeting enforcement, and detailed empirical tests of actual enforcement patterns are analyzed in other work. Here I shall only note that while there are obvious advantages in terms of economies of scale and signaling to reviewing large establishments first, there seems little to be gained in terms of reducing discrimination by enforcing affirmative action primarily at establishments that already have the highest representation of non-whites, conditional on size. Among the 41258 establishments that were contractors in 1974, the establishments that were reviewed between 1975 and 1979, inclusive, employed an average of 745 workers in 1974, far more than the average of 239 employed by non-reviewed contractors. In addition, the employment share of non-whites was 24% greater at reviewed contractors than at non-reviewed contractors in 1974, before review. This helps explain why we previously observed no decline in the variance of representation among contractors. If one thought of the growth of non-white representation as following a logistic growth curve, then squeezing further gains from establishments in the upper tail of the distribution would be difficult. If reviewed contractors start out above the mean in protected group employment, compliance reviews that prompt them to increase their employment of minorities further may actually increase the variance in representation in the contractor sector.

Establishments that were reviewed expanded in size, though not significantly more than the non-reviewed. Since the reviewed establishments were relatively non-white intensive, the likely scale effect would work against an increase in non-white employment share among the reviewed[6].

The observed impact of compliance reviews should be interpreted in view of a plausible simultaneity argument: the OFCCP tends to review those establishments with

the lowest growth rates of female and minority employment. This is indeed among the things the OFCCP claims to do. If so, this simultaneity would bias against finding a higher growth rate for female or minority representation among reviewed establishments.

Multivariate Log-Odds Models

Do compliance reviews and contractor status have the same impact if other variables are controlled for? For example, the size of the establishment could be a crucial variable. Large plants might tend to be good corporate citizens, or they may be more likely to have formalized and rationalized personnel systems. Or simply by being large they may escape the familial or tribal tendencies of small workforces. For any of these reasons, one might expect larger firms to have better affirmative action records. At the same time, one might expect contractor status to be positively correlated with establishment size. In this case, the previous finding in cross-tabulations of a positive relationship between contractor status and growth rates of female and minority employment share might be spurious; it might be picking up the correlation between protected group share and the omitted establishment size. Similar arguments of a more tenuous nature may be made about industry and region.

In this section I present the results of log-odds equations that correct for establishment size, growth rate, corporate structure, percent non-clerical white-collar, industry, region, and initial period demographics. The sample means of these control variables, and the abbreviations by which they shall be referred in the following tables, are indicated in Table 2. The interpretation of contractor effects in this section assumes that both contractor and non-contractor establishments are wage takers in the same labor markets, and that both sectors have the same wage elasticity of demand.

Table 3 presents the primary log-odds results, and shows a consistent pattern across demographic groups. Establishments that were contractors in 1974

significantly increased the employment share of black males, other males, white females and black females. According to Table 3, compliance reviews also played a significant role in advancing black males, white females and black females, and in retarding the employment of non-black males.

The estimate in equation 2 is that black males' share of employment increased .82 percentage points more in contractor establishments, not counting the direct effect of reviews. Since 6.8 percent of all contractor establishments accounting for 17.4 percent of all contractor employment were reviewed in subsequent years, the additional impact of compliance reviews is to increase black males share by .174 times 1.03, or .18 percentage points. The total impact of the contract compliance program is then to raise black males' share by one percentage point in the contractor sector over the six years between 1974 and 1980. Dividing by six, yields a rough annual impact of .17. This is about the geometric mean of previous estimates: a fourth of Heckman-Wolpin's estimated .7 percentage point annual impact, but four times greater than Goldstein-Smith's .036. This shift over six years is not small. It is equivalent to 14 percent of black males' initial weighted employment share in the contractor sector, not an insubstantial demand shift.

These demand shifts, the central results of Table 3, are summarized in Table 4. With the exception of the residual and smallest group, non-black minority females, members of protected groups have enjoyed improved employment opportunities at contractor establishments. This also holds true for white females in this log-odds specification, although the effect is of marginal significance. In row 2, compliance reviews appear to have been an effective tool in changing employment patterns. The impact of compliance reviews is greater than the impact of simply being a federal contractor in every case except non-black minority males. Direct pressure does make a difference.

The evidence here is that a process that has been frequently criticized as largely

an exercise in paper-pushing has actually been of material importance in prompting companies to increase their employment of minorities and females. The combined impact of being a contractor, and of undergoing a review as in the case 17.4 percent of all contractor employment, is presented in row 3. Row 5 displays the relative extent of these contract compliance induced demand shifts by expressing them as a proportion of initial 1974 employment shares in the contractor sector. The shift is largest for blacks: fourteen percent for black males, and eleven percent for black females. The proportionate shifts for white females and for non-black minority males are not as large: two and five percent respectively. It has been commonly speculated that employers can kill two birds with one stone by hiring black females. The evidence here is that while black females have gained relatively more under affirmative action than white females, they have not gained more than black males, so that being black appears more important than being female. Had black females been especially favored, we would have expected their relative gains to be the greatest.[7]

To derive an estimate of the effect of affirmative action on market demands, I assume that affirmative action has not directly altered labor demand schedules in the non-contractor sector. I also maintain the assumptions that the demand elasticities are equal in both sectors, and the supply curve identical, so that the differential between employment shifts in the contractor and non-contractor sectors can be identified as a demand shift. Since 68.6 percent of employment in the sample is in contractor establishments, the market demand shift in row 6 is taken to be .686 times the shift in the contractor sector. In other words, the market shift is simply the weighted average of sectoral shifts. Because many small employers who are not contractors are not included in the sample, this may well overestimate the shift in the economy as a whole.

Employment opportunities depend critically on growth. Table 3 also indicates that minorities and females experienced significantly greater increases in representa-

tion in establishments that were growing and so had many job openings. For every percentage point increase in the growth rate of establishment employment, white males' employment share drops by about half a percentage point, suggesting that members of protected groups dominate the net incoming flows. Establishment size has only a small impact, but establishments that are not part of multi-plant corporations have significantly lower growth rates of employment for members of protected groups.[8] Corporate size matters rather than establishment size, with larger corporations showing greater increases in minority and female employment. It is also important to note that the tests here also control for the skill requirements of each establishment. Establishments that are non-clerical white-collar intensive exhibit faster employment growth for members of all protected groups except black males.

There is significant variation in the growth of minority and female representation across industries and regions. To determine the within industry within region impact of affirmative action, all of the equations in Table 3 include 27 industry and 4 region dummy variables. The omitted groups were retail trade and New England. Some of these variables had significant and strong effects. White males' employment share, a summary measure, is significantly five or more percentage points higher in mining, construction, lumber, stone clay and glass, and transportation. It is five or more percentage points lower in apparel. Mirroring this, white females' share is significantly 5 or more percentage points lower in agriculture, mining, construction, stone clay and glass, primary metals, petroleum and coal products, and transportation, and five or more higher in apparel and furniture. Black males' share is significantly at least 2 percentage points lower in agriculture, mining, apparel, lumber, leather, and electrical machinery. Since initial 1974 employment share, region, growth rate, and percent non-clerical white-collar are controlled for, these appear to reflect real differences across sectors in the growth of minority and female employment. Across regions, blacks increase their employment share significantly more in the South, although F-

tests do not reject the equality of coefficients on contractor and review status in the South and nationally.

Changes in Contractor Status

The impact of establishments which change contractor status between 1974 and 1980 is explored in Table 5. In the case of black males, the coefficients line up in the expected order of magnitude. Black males experienced the greatest employment gains at establishments that remained contractors, followed in order by establishments that left contractor status, those that became contractors, and finally, those that never were contractors. For all protected groups, employment gains, if any, were smaller at establishments that were not contractors in 1974 and 1980 than in establishments that were contractors in either or both years. Except for white females, establishments which left contractor status demonstrate better employment records for members of protected groups than do establishments that just became contractors. This is consistent with state dependence based on the inertia of employment stocks and personnel policies[9]. Before leaving Table 5, note that while the status change variables are usually individually significant, they do not generally contribute to a significant reduction in the standard error of the estimate.

The statistical tests shown in this section give evidence of a contract compliance program that works. Executive Order 11246 has led to significant employment gains for females and for blacks in contractor establishments, and compliance reviews have played an important role in this process.

Selection or Changed Behavior?

It is not implausible to suppose, along the lines of Heckman and Wolpin, that those establishments with a relative overabundance of white males would avoid being federal contractors. Some of the findings presented above might be qualified if there were evidence of such selection: if establishments with high protected group employment

were more likely to be contractors. Because of the recursive nature of the system, this proposition is tested in Table 6 in logit estimates of the probability of being a contractor in 1980 as a function of 1974 demographics, the change in demographics between 1974 and 1980, and establishment size, growth rate, corporate status, industry and region. There is little evidence here to support the proposition that establishments with a high or growing level of minority or female employment are more likely to be contractors. This leads one to speculate that perhaps the costs of affirmative action are not great on average, or that they are balanced by lump-sum transfers from the government in a contracting process that does not turn on price alone.

The evidence in Table 6 suggests that the establishments that were more likely to be contractors in 1980 were actually those with the greatest proportion of white males and the least proportion of minorities and females in 1974, just the opposite of what one selection argument would suggest. Similar results are found when contractor status in 1974 is controlled for in linear probability equations. These effects are significant, with the exception of black males, who have no significant impact one way or the other on contractor status at the .05 confidence level. Since the share variables must sum to one, the smallest group, non-black minority females, is omitted. Controlling for initial period demographics, Table 6 also suggests that establishments with the greatest increases in minority or female employment share were not significantly more likely to be contractors in 1980[10]. Affirmative action appears to work not by the selection of firms with good records of protected group employment into contractor status, but rather by inducing contractors to employ more minorities and females.

IV. The Impact on Racial Earnings Inequality

Those who have argued about the propriety of affirmative action have not been quibbling over a fine point. The federal contract compliance program has substantially improved employment opportunities for members of protected groups. The

growth rates of females' and minorities' shares of employment are greater in contractor establishments obligated to undertake affirmative action than in non-contractor establishments with no such obligation. Compliance reviews, the major enforcement tool of the affirmative action program, while poorly targeted against discrimination, have contributed significantly to improving the employment of members of protected groups.

The scale of the demand shifts due to affirmative action found in this paper is not small, but this can best be appreciated by comparing them to relative wage changes during the same period. Between 1974 and 1980, the black male to white male ratio of the mean earnings of full-time, full-year workers increased by 2.3 percent from .684 to .700.[11] What part of this improvement in relative black male earnings may be explained by affirmative action?

To frame the implications of the demand shifts found here for the change in black male relative earnings, consider the following simple model of the labor market, where all variables are in logarithmic form:

$$N^D = \lambda - \eta \ W \tag{6}$$
$$N^S = b + \varepsilon \ W \cdot \tag{7}$$

where

N^D is the logarithm of the demand for black male labor relative to white male labor.

N^S is the logarithm of relative labor supply.

W is the logarithm of the ratio of black to white male wages.

In equilibrium:

$$W = \frac{\lambda - b}{\varepsilon + \eta} \tag{8}$$

The logarithmic derivative of relative wages with respect to a demand shift is then:

$$\frac{dW}{d\lambda} = \frac{1}{\varepsilon + \eta} \tag{9}$$

In Table 3 I estimated that the relative demand for black male to white male work-

ers increased by 14.8 percent in the contractor sector between 1974 and 1980. Maintaining the assumption that affirmative action has not directly shifted demand curves outside the contractor sector, and assuming that roughly half of all employment is in the contractor sector, the implied relative demand shift overall is 7.4 percent. For demand and supply elasticities that sum to less than six, at least half of the improvement in black relative earnings among men may be explained by affirmative action. Since the actual percentage increases in the ratio of median earnings, or in the mean or median earnings of all workers were all less than 2.3 percent, affirmative action may well have played an even greater role. The same would be true the lower the elasticity of supply or demand. While it is not implausible to think of the elasticity of relative labor demand being greater than one, in other work I estimate this elasticity of substitution of non-white for white male labor to be on the order of of .7 to 1.1. While other factors on both the demand and the supply side of these markets have likely also played a role, the increase in the demand for black male labor relative to white induced by affirmative action can help account for a significant part of of the increase in the relative earnings of black males.[12]

V. Conclusion

The tests presented here suggest that while generating tremendous public criticism and resistance and while undergoing frequent regulatory reorganization, affirmative action has actually been successful in promoting the employment of minorities and females, though less so in the case of white females. In the contractor sector affirmative action has increased the demand relative to white males of black males by 14.8%, of non-black minority males by 6.3%, and of white females by 2.9%. Among females, it has increased the demand for blacks relative to whites by 9.0%. For a program lacking public consensus and vigorous enforcement, this is a surprisingly strong showing. While the gains of white females are smaller than those of blacks, it is important to keep in mind that the employment of females and minorities has been

increasing in both sectors. Indeed, if the OFCCP pressured establishments to hire more females and minorities compared to their own past record rather than compared to industry and region averages, the observed pattern is just what we would expect to see during a period when female labor supply had been growing. Females' share would increase at all establishments due to the supply shift, and contractor establishments would be under little pressure to employ more females than non-contractors. The relatively shorter history of affirmative action for females, as well as the demographic composition of the bureaucracies that enforce affirmative action, may also help explain the differential impact of affirmative action across protected groups.

This paper has presented significant large sample evidence with detailed controls at the establishment level that minority and female employment has increased faster at contractor establishments that bear the affirmative action obligation. It has also shown that compliance reviews have not been well targeted against discrimination, but have been an effective enforcement tool. In sum, amidst vigorous contention and weak enforcement, affirmative action appears to have played a major role in improving the economic position of minorities and females.

Appendix: Data

Two rich, detailed, and disaggregated data sets are used in the empirical tests: establishment level EEO-1 reports on more than sixteen million employees for 1974 and 1980, and establishment level affirmative action compliance review reports for the period 1973 to 1981. Access to this data was made possible by the Office of the Assistant Secretary for Policy Evaluation of the U.S. Department of Labor and by the OFCCP's Division of Program Analysis.

Under Title VII of the Civil Rights Act of 1964, the Equal Employment Opportunity Commission requires annual reports on workforce demographics from all private employers with 100 or more employees, or 50 or more employers and a federal contract or first-tier subcontract worth $50,000 or more. In the case of multi-plant employers, all establishments with more than 24 employees that belong to firms fulfilling the above conditions must report individually. In 1978, 39,000 employers with more than 165,000 establishments filed reports covering 36 million employees, more than half of all private non-farm employees. The EEO sample is extensive, covering three-quarters of all manufacturing employment as reported by the B.L.S. Employers with small workforce establishments such as construction, trade and agriculture are underrepresented. Construction and agriculture are also underrepresented because temporary or casual employees are not counted as employees for the purposes of reporting requirements [EEOC Report 1978, p.xi].

Firms may have an incentive to discover that their white male employees are really minority females when it comes to filling out their EEO-1 forms. This need raise no problem for the current study if such "inflation" is uniform across sectors as is likely if liability to Title VII litigation is perceived as the primary threat. Under Title VII pressure moreover, firms will be more concerned with inflating minority and female employment levels than growth rates. However, if this lying does extend subtly to growth rates, then to the extent that such behavior is greater among contractor

establishments, all studies including the one at hand, that rely on comparisons of contractor and non-contractor EEO-1 forms will overestimate the true impact of affirmative action.

From samples of roughly 160,000 establishments in 1980 and 100,000 establishments in 1974 I found 68,690 establishments that filed identifiable reports in both years. The empirical tests comparing contractors with non-contractors are based on these 68,690 establishments with more than sixteen million employees from the matched sample.

An establishment is considered a contractor if the company or any of its establishments are prime government contractors or first-tier subcontractors with a contract, subcontract or purchase order of $50,000 or more. This study identifies any such establishment as a contractor, whether or not the establishment so identified itself. Note that the sub-contractor clause vastly extends the compass of affirmative action regulation. To the extent that I label as contractors some establishments that are not aware that they are under the affirmative action obligation, I mix the sin of ignorance together with the greater sin of willful volition. If affirmative action were found to be ineffective, it would be useful to separate these two causes.

Contractor status changers, particularly entrants, between 1974 and 1980 are surprisingly common. Eleven percent of all 1974 contractors establishments were non-contractors in 1980, while twenty-seven percent of all 1974 non-contractors were identified as contractors in 1980, constituting seventeen percent of all 1980 contractors. This suggests contractors have become better labeled over time. Whether these status changes are true, or just an artifact of more accurate reporting, my results will be biased against finding any affirmative action effect when I test according to 1974 status only. In other words, I underestimate the effect of being a contractor because I include among the non-contractors some establishments that became or really were contractors, and I include among the contractors some establishments that became or

really were non-contractors.

To compare demographic changes across reviewed and non-reviewed establishments I merged the matched 1974 and 1980 EEO-1 establishment demographic data with data on OFCCP compliance reviews. OFCCP administrative records contain data on 27,000 compliance reviews at 11,000 identifiable establishments, between 1973 and 1981. Before 1978, I have data almost exclusively on reviews conducted by the Department of Defense, but these accounted for nearly half of all compliance reviews. Reviews completed prior to 1973 or after 1979 are underrepresented, and due to general under-reporting some establishments that were reviewed will be included among the non-reviewed, biasing my tests against finding an impact of compliance reviews. I labeled as reviewed any establishments that had a record of at least one compliance review between 1975 and 1979 inclusive. Multiple reviews are not rare, but are not controlled for in my tests. Since I expect decreasing returns to multiple reviews, this will bias against finding any review effect in the case of establishments reviewed prior to 1974. In other cases I will simply be measuring the cumulative effect of reviews. Since the mode year of review completion in the sample is 1975, while demographic changes are measured between 1974 and 1980, there is little potential for underestimating review effects due to lags in response.

NOTES

1. Affirmative action in this study refers narrowly to the obligation borne by federal contractors under Executive Order 11246, and not to other forms of voluntary of court ordered affirmative action.

2. See for example the cases of Legal Aid Society of Alameda County v. Brennan, Women's Equity Action League v. Department of Labor, and Washington Area Construction industry Task Force v. Marshall.

3. Throughout this study, one of the chief concerns is what the labor market for minorities and females would have been in the absence of Executive Order 11246. A distinct question is: what would happen in the future if affirmative action were abolished? The tax models of regulation just presented are suitable for the first question, but pre-judge the answer to the second. In the absence of the regulatory tax the model assumes the demand for minorities and females will resume its former level. A more complex model along the lines of Aigner and Cain is needed, that allows for learning and changes in discriminatory behavior. Afterall, one of the goals of affirmative action is to break down prejudice. If employers have falsely pre-judged minorities and women to be less capable than white males, a temporary affirmative action program might have permanent effects by shocking them into correcting their mistake faster.

4. The contractor and review effects here are unlikely to really be due to an omitted Title VII variable. Across state by 2-digit SIC industry cells, the correlation of Tile VII class action cases decided in the federal district courts and contractor employment is only .19. Of course, this is not to detract from the important role played by Title VII in the development and enforcement of affirmative action. The direct effect of Title VII is the subject of other work.

5. Table 1 shows that affirmative action has been effective at the average establishment, not for the average worker. To draw inferences regarding wages, changes

in employment share must be weighted by establishment size. This comparison shows smaller differences between sectors, suggesting that affirmative action has produced greater changes at smaller establishments.

6. It is also interesting to note that contractor establishments that were reviewed at all underwent an average of 1.8 reviews between 1975 and 1979 inclusive, and that these reviewed contractors were more likely to maintain contractor status than were the non-reviewed contractors. Only 3.4 percent of the reviewed contractors were no longer contractors by 1980. In contrast, 11.8% of the non-reviewed contractors ceased being contractors. While not controlling for other variables, this comparison does not in itself suggest that the compliance review process is so burdensome as to lead firms to eschew federal contracts.

7. Other regressions show some evidence that affirmative action for black males has been more effective at male intensive establishments. Weighting by establishment size does not significantly alter the major conclusions presented here.

8. At the same time other tests do show evidence of a tradeoff between the employment growth of females and minority males.

9. Except for black males, the impact of affirmative action actually appears to have been greater at establishments that ceased being contractors than at those that remained contractors. If some establishments found the cost of complying with affirmative action exorbitant, one might well expect them to give up being contractors before incurring the cost. In this sense, the pattern observed in these cases is anomalous. Similarly, unless screening of new contractors has become more stringent, it is not obvious why new entrants should have better records of employing white females and of not employing white males than contractors of long-standing. If these establishments are becoming contractors because they find it easy to comply with affirmative action, as one self-selection argument goes, why didn't they choose to reap the benefits of being a federal contractor six

years sooner?

10. However, one would have expected some of these coefficients to be positive, and the coefficient on white males is also negative. While it is possible to interpret these estimates to say that conditional on 1974 demographics, establishments in which white male employment share increased at the expense of black males were slightly more likely to be contractors, this small effect is statistically insignificant. In general, there is no significant evidence here that establishments with a large or growing proportion of minority or female employees are more likely to be contractors. In this regard, it is worth recalling that the Heckman-Wolpin estimates imply that individually the level or growth of black male employment share had an insignificant effect on the probability of being a federal contractor, and that establishments with high or growing female or non-black minority employment shares were actually less likely to be contractors, though insignificantly so [Heckman and Wolpin, Table 7, p. 562].

11. Earnings of full-time workers employed 50-52 weeks from U.S. Bureau of the Census, Current Population Reports, Series P-60, "Money Income in 1974 of Families and Persons in the U.S.", no. 101, January, 1976, Table 61, p.127. and from U.S. Bureau of the Census, Current Population Reports, Series P-60, "Money Income in 1974 of Households, Families, and Persons in the U.S.", no. 132, July, 1982, Table 59, p.213,214.

12. For a discussion of these issues see Brown, and Butler and Heckman.

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Table 1: Proportion of all Employees

Line	Demographic Group	Contractor Status	Number	1974 Mean	σ	1980 Mean	σ	MeanΔ	Mean%Δ
1	Black	N	27432	.053	.10	.059	.10	.006	28
2	Males	Y	41258	.058	.10	.067	.10	.008	33
3				(6.0)		(9.4)		(6.5)	(3.6)
4	Other	N		.034	.10	.046	.10	.012	52
5	Minority	Y		.035	.08	.048	.09	.013	58
6	Males			(1.6)		(2.1)		(1.2)	(2.1)
7	White	N		.448	.27	.413	.26	−.034	−2
8	Males	Y		.584	.26	.533	.25	−.047	−4
9				(66.7)		(66.5)		(16.4)	(2.0)
10	Black	N		.047	.10	.059	.11	.012	47
11	Females	Y		.030	.07	.045	.08	.015	77
12				(24.0)		(19.2)		(5.7)	(10.8)
13	Other	N		.024	.08	.036	.08	.012	65
14	Minority	Y		.016	.05	.028	.06	.012	77
15	Females			(14.8)		(13.0)		(1.1)	(3.2)
16	White	N		.394	.27	.400	.26	.006	17
17	Females	Y		.276	.23	.288	.23	.012	30
18				(59.7)		(57.8)		(7.8)	(11.9)
19	Total	N		186	286	209	341	23	17
20		Y		271	728	276	720	5	21
21				(21.2)		(16.2)		(10.7)	(3.3)

Note: T-Tests across means in parentheses, on every third line. In every case, F-tests reject equality of variances across contractors and non-contractors, with more than 99% confidence. The last column is the mean of percentage changes, not the percentage of change in means.

N = non-contractor in 1974.

Y = contractor in 1974.

Table 2: Variable Definitions, Means, and Standard Deviations
N = 68690

Variable Name	Mean	Standard Deviation	Definition
C74	.601	.49	= 1 if establishment was part of a contractor company in 1974
STAYC	.533	.50	= 1 if establishment was part of a contractor company in 1974 and in 1980
LEAVEC	.068	.25	= 1 if establishment was part of a contractor company in 1974 but not in 1980.
ENTERC	.109	.31	= 1 if establishment was part of a contractor company in 1980 but not in 1974.
R	.041	.20	= 1 if establishment completed a compliance review between 1974 and 1980 exclusive.
SIZE	237	594	Total number of employees in 1974.
GROWTH	.197	1.67	Rate of growth of total employment from 1974 to 1980.
SINGLE	.183	.39	= 1 if establishment was not part of a multi-establishment company.
PWC	.381	.31	Proportion of all employees who are officials, managers, professionals, technicians and sales people.

Table 3: Log-Odds Equations of the Effect of Contractor and Review
Status on Employment by Demographic Group.
N = 68690

Demographic Group	White Males	Black Males	Other Males	White Females	Black Females
Equation:	1	2	3	4	5
C74	−.300	.816	.207	.242	.310
	−.012	.136	.046	.011	.062
	(.005)	(.009)	(.009)	(.006)	(.009)
R	−1.43	1.03	−.234	1.34	.660
	−.057	.171	−.052	.061	.132
	(.012)	(.021)	(.022)	(.015)	(.021)
P74*	115	56.5	46.0	110.0	53.8
	4.60	9.41	10.21	4.92	10.76
	(.010)	(.042)	(.050)	(.013)	(.050)
SIZE	.0002	.0002	−.00063	−.0026	−.00027
	.000008	.000033	−.00014	−.00012	−.00043
	(.000004)	(.000007)	(.000007)	(.000005)	(.000007)
GROWTH	−.475	.138	.117	.163	.130
	−.019	.023	.026	.007	.026
	(.001)	(.002)	(.002)	(.001)	(.0023)
SINGLE	.050	−1.27	−.851	−.792	−1.53
	.002	−.212	−.189	−.036	−.305
	(.007)	(.012)	(.012)	(.008)	(.012)
PWC	−4.43	−.324	.887	10.41	.66
	−.177	−.054	.197	.471	.131
	(.009)	(.016)	(.0017)	(.011)	(.016)
R²	.837	.545	.519	.796	.536
MSE	.343	.992	1.116	.485	1.017

Note: The first line is 100(dP/dX) evaluated at mean P. The second is the
coefficient from the log-odds equation. The third is the standard error. All
equations include 27 industry and 4 region dummies.

Table 4: Demand Shifts Induced by the Contract Compliance Program: A Summary of Table 3.

Demographic Group:	White Males	Black Males	Other Males	White Females	Black Females
Equation:	1	2	3	4	5
1. Contractor Effect	−.30*	.82**	.21**	.24	.31**
2. Review Effect	−1.43**	1.03**	−.23*	1.34**	.66**
3. Total Effect	−.55	1.00	.17	.47	.42
4. Initial Share in Contractor Sector	59.8	7.3	3.2	24.4	3.8
5. Proportionate Shift in Contractor Sector	−.01	.14	.05	.02	.11
6. Proportionate Market Demand Shift	−.01	.10	.03	.01	.08

Note: The contractor and reviewer effects are the change in proportion as estimated in Table 3 evaluated at the sample mean. The initial shares are means across establishments weighted by establishment size, or, in other words, the ratio of means in the contractor sector. Significance levels are indicated in rows 1 and 2 only.

    * = Significant at the .05 level.
    ** = Significant at the .01 level.

Table 5: Log-Odds Equations of the Effect of Contractor and Review
Status on Employment by Demographic Group, Status
Changers.
N = 68690

Demographic Group: Equation:	White Males 1	Black Males 2	Other Males 3	White Females 4	Black Females 5
STAYC	−.375	.876	.230	.506	.240
	−.015	.146	.051	.023	.048
	(.006)	(.010)	(.011)	(.007)	(.010)
LEAVEC	−1.025	.786	.333	.748	.825
	−.041	.131	.074	.034	.165
	(.010)	(.017)	(.018)	(.012)	(.017)
ENTERC	−.575	.150	.113	.968	.050
	−.023	.025	.025	.044	.010
	(.008)	(.014)	(.015)	(.010)	(.014)
R	−1.45	1.02	−.230	1.34	.700
	−.058	.169	−.051	.061	.140
	(.012)	(.021)	(.022)	(.015)	(.021)
P74	115	56.5	46.0	110.0	53.8
	4.60	9.41	10.21	4.92	10.74
	(.010)	(.042)	(.050)	(.013)	(.050)
SIZE	.0002	.0002	−.00063	−.00026	.00027
	.000008	.000032	−.00014	−.000012	.000042
	(.000004)	(.000007)	(.000007)	(.000005)	(.0000007)
GROWTH	−.475	.138	.117	.163	.130
	−.019	.023	.026	.0074	.026
	(.001)	(.002)	(.002)	(.00016)	(.0023)
SINGLE	.002	−1.25	−.837	−.682	−1.55
	.0001	−.208	−.186	−.031	−.309
	(.007)	(.012)	(.012)	(.008)	(.012)
PWC	4.43	−.336	.887	10.36	.69
	−.177	−.056	.197	.471	.137
	(.009)	(.016)	(.0017)	(.011)	(.016)
R^2	.837	.545	.519	.796	.536
MSE	.343	.992	1.116	.485	1.016

Note: The first line is 100(dP/dX) evaluated at mean P. The second is the
coefficient from the log-odds equation. The third is the standard error. All
equations include 27 industry and 4 region dummies.

Table 6: Logit Estimates of Simultaneity: the Effect of Establishment Demographics on Contractor Status in 1980.
N = 68690

	$\frac{dP}{dx}(\bar{P})(1-\bar{P})$	Beta	Asymptotic Standard Error
Proportion White Male, 1974	.079	.344	.13
Proportion Black Male, 1974	−.032	−.138	.15
Proportion Non-Black Male, 1974	−.086	−.376	.18
Proportion White Female, 1974	−.205	−.891	.13
Proportion Black Female, 1974	−.200	−.871	.17
Δ Proportion White Male, 1980-1974	−.552	−2.40	.18
Δ Proportion Black Male, 1980-1974	−.543	−2.36	.23
Δ Proportion Non-Black Minority, 1980-1974	−.727	−3.16	.25
Δ Proportion White Female, 1980-1974	−.499	−2.17	.17
ΔProportion Black Female, 1980-1974	−.511	−2.22	.23
SIZE	.0011	.0047	.0043
GROWTH	−.453	−1.97	.021
SINGLE	.00009	.00039	.00013
27 Industry and 4 Region Dummies	Yes		
MSE	.189		
Mean of Dependent Variable	.641		