THE POLITICS OF EMPLOYMENT DISCRIMINATION IN THE FEDERAL BUREAUCRACY*

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I. INTRODUCTION

THE federal government is the largest employer in the United States. In 1978, it employed over 2.4 million full-time civilian workers, of whom 31.1 percent were women, and 22.0 percent were classified as minority employees.[1] The evidence in several recent studies suggests that the earnings of minorities and women employed by the federal government are substantially lower than the earnings of "similar" white males; they also conclude that the extent of wage discrimination in the federal government is slightly less than that found in the private sector.[2] Although these studies provide a useful description of the economic status of the various sex and race groups, they do not expand our understanding of the government's behavior in its hiring and placement of these groups. That is, these studies give little hint as to how government objectives are translated into federal employment policy.

   This paper shifts the focus of analysis from a comparison of federal and private racial and sexual wage differentials to a study of how different

   [1] U.S. Office of Personnel Management, Equal Employment Opportunity Statistics, 2 (Gov't Printing Office 1978).

   [2] The most exhaustive analysis is contained in Sharon P. Smith, Equal Pay in the Public Sector: Fact or Fantasy (Princeton University, Industrial Relations Section 1977). Other studies include George J. Borjas, Discrimination in HEW: Is the Doctor Sick or Are the Patients Healthy? 21 J. Law & Econ. 97 (1978); James E. Long, Employment Discrimination in the Federal Sector, 11 J. Human Resources 86 (1976); and D. Alton Smith, Government Employment and Black/White Relative Wages, 15 J. Human Resources 77 (1980).

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agencies within the federal government pay their respective minority and female workers. This emphasis on the internal structure of racial and sexual wage differentials is likely to be useful for two reasons. First, it has been found that there are significant wage differentials among federal agencies for individuals of given skills.[3] Thus it may be reasonable to expect that the relative wage of blacks and women differs among the various agencies. Second, and more important, if the government is assumed to maximize a particular objective function then federal policy regarding the employment of the various sex and race groups should show systematic patterns. Hence an empirical study of black or female relative wages within the federal government can be used to test hypotheses about government behavior.

The analysis presented in this paper assumes that the "government" has a single objective: the maximization of political support.[4] This hypothesis predicts how the federal budget will be allocated among the various federal agencies, the wage and employment levels in each agency, and the agency's policy towards the employment of minorities and women in its bureaucracy.[5] In particular, the vote-maximization hypothesis predicts that the economic status of minorities in federal agencies depends on how important minorities are to the political support generated by the particular agency.

Table 1 presents statistics summarizing various employment characteristics of selected federal agencies. Column 1 gives the total employment (in thousands) of the federal agency. Column 2 gives the percentage of the labor force that is classified as minority in each agency.[6] Column 3 gives the fraction of positions at the upper management levels in the white-collar labor force (defined as a General Schedule [GS] grade greater than or equal to 12) filled by minorities. Finally, column 4 gives the ratio of columns 3 and 2. The differences among federal agencies are dramatic. For example, the largest agency, the Department of Defense, is 18.6 percent minority. Other agencies, like Agriculture or the Tennessee Val-

    [3] George J. Borjas, Wage Determination in the Federal Government: The Role of Constituents and Bureaucrats, 88 J. Pol. Econ. 1110 (1980).

    [4] This hypothesis has its modern roots in the work of Gary S. Becker, Competition and Democracy, 1 J. Law & Econ. 105 (1958); and Anthony Downs, An Economic Theory of Democracy (1957).

    [5] The vote-maximization approach was first applied to federal wage policy by Borjas, *supra* note 3.

    [6] "Minorities" are defined as Negroes, Hispanics, American Indians, Eskimos, etc. Throughout the paper the term "white" will be used to refer to nonminority individuals, while the terms "minority" and "black" will be used interchangeably to refer to all minorities.

TABLE 1

SUMMARY STATISTICS ON MINORITY AND FEMALE EMPLOYMENT IN FEDERAL GOVERNMENT

Agency	Employment (in 1,000s) (1)	Percent Minority (2)	Percent of GS≥12 Positions Filled by Minorities (3)	Column 3/ Column 2 (4)	Percent Female (5)	Percent of GS≥12 Positions Filled by Women (6)	Column 6/ Column 5 (7)
Agriculture	90.7	9.8	5.2	.53	24.9	4.6	.18
Commerce	31.7	21.6	9.7	.45	34.2	10.3	.30
Defense	885.5	18.6	6.1	.33	29.5	5.8	.20
Energy	18.2	14.1	7.1	.50	31.1	8.7	.28
Health, Education, and Welfare	139.1	31.6	15.2	.48	62.4	24.1	.39
Housing and Urban Development	17.1	28.2	16.6	.59	46.1	14.1	.31
Interior	68.1	28.0	9.0	.32	29.5	5.5	.19
Justice	53.0	20.9	7.3	.35	34.7	5.4	.16
Labor	21.7	24.9	14.5	.58	42.0	14.2	.34
State	15.8	18.4	8.0	.43	36.4	12.8	.35
Transportation	70.3	12.7	7.0	.55	17.1	2.7	.16
Treasury	110.6	19.8	6.9	.35	46.8	7.3	.16
Civil Aeronautics Board	.7	20.9	4.2	.20	42.6	14.2	.33
Civil Service Commission	6.9	31.8	13.2	.42	55.9	21.0	.38
Commission on Civil Rights	.3	65.0	46.9	.72	58.1	41.4	.71
Environmental Protection Agency	10.8	15.7	6.3	.40	35.5	8.7	.25
Equal Employment Opportunity Commission	2.6	63.4	58.4	.92	57.4	30.6	.53
Federal Communications Commission	1.7	27.1	9.9	.37	40.9	7.7	.19
General Services Administration	35.9	39.5	11.1	.28	33.1	13.1	.40
National Aeronautics and Space Administration	23.6	9.1	4.3	.47	19.6	3.3	.17
Securities and Exchange Commission	1.8	23.6	7.1	.30	38.8	10.5	.27
Tennessee Valley Authority	45.9	7.8	3.0	.38	9.5	2.2	.23
Postal Service	511.3	25.3	...	...	16.0	...	...
Veterans Administration	195.7	29.9	10.2	.34	53.3	18.3	.34
Total Government	2,418.2	22.0	8.1	.37	31.1	8.7	.28

SOURCE.—U.S. Office of Personnel Management, Equal Employment Opportunity Statistics (Gov't Printing Office 1978).

ley Authority (TVA), are less than 10 percent minority. On the other hand, "minority-oriented" agencies like the Equal Employment Opportunity Commission (EEOC) are two-thirds minority. Similarly, while only 5.2 percent of the management jobs are filled by minorities in the Department of Agriculture, 58.4 percent of these jobs are filled by minorities in EEOC. Finally, note that the distribution of minorities between the lower and higher GS grade jobs differs significantly among federal agencies.

Similar results are obtained in columns 5–7 of Table 1 regarding the employment of women by federal agencies. For example, in the Department of Defense, 29.5 percent of the workers are female, while the respective statistic in the Department of Health, Education, and Welfare is 62.4 percent. The statistics in Table 1 also reveal a large dispersion both in the fraction of management jobs occupied by women and in the distribution of women between the lower and higher GS grades among federal agencies.

Of course, these statistics are not conclusive evidence that the vote-maximization objective of the government leads to different placement of blacks and women across federal agencies. However, the large differences documented in Table 1 suggest that racial and sexual employment policies in the federal government deserve careful study. Section II presents the theoretical framework for the analysis. Section III introduces a set of observable variables which proxy for the theoretical concepts responsible for shifts in the demand for blacks and women in the government. Section IV documents the existence of large wage gaps between white males and statistically similar individuals in other sex and race groups in federal agencies. It also shows that these "unexplained" wage differentials are partly caused by the government's attempt to improve the economic status of minorities and women where it is politically valuable to do so. Finally, Section V summarizes the results of the study.

II. Theory

This section develops a simple hypothesis that creates incentives for federal agencies to take into account the race and sex of workers in their hiring and placement decisions. For concreteness the model will be derived in the context of racial discrimination. The generalization to sexual discrimination is trivial and is discussed below. The main assumption of the model is that a federal agency caters to a "constituency" and that the constituency has tastes for discrimination. The model is, therefore, an application of Becker's concept of consumer discrimination, where the constituents are the consumers of the agency's output.[7]

[7] Gary S. Becker, The Economics of Discrimination (2d ed. 1971).

Assume there are k agencies in the federal government. Agency i has n_i constituents.[8] The fraction of the constituency that is black is given by q_i^b. Each white (w) or black (b) constituent calculates the benefit he obtains from the agency's output, Z_i. This benefit will be translated into political support for the incumbent government through a "vote" function. By assumption, the individual's political support depends not only on the agency's output, but is also affected by the color of the agency's bureaucracy. The amount of political support generated by the actions of agency i from a representative constituent in race group j is given by:

$$V_i^j = V_i^j (Z_i, p_i^b), \qquad j = (w,b), \tag{1}$$

where p_i^b is the fraction of blacks employed in the agency's labor force.[9] It is assumed that all constituents of race j have the same vote function, but there may be differences in the vote function between the two race groups.

The taste discrimination hypothesis is introduced by assuming that whites like seeing whites employed in agency i, and dislike seeing blacks employed in agency i. Similarly the black constituency prefers to see blacks employed. This hypothesis implies that:

$$\frac{\partial V_i^w}{\partial p_i^b} < 0 \tag{2}$$

and

$$\frac{\partial V_i^b}{\partial p_i^b} > 0. \tag{2'}$$

Of course, the derivative $\partial V_i^j / \partial Z_i (j = w,b)$ is positive since more political support is forthcoming from both race groups the larger the level of government services provided to the constituency.

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[8] A formal definition of the constituency is given in Borjas, *supra* note 3. Note n_i is assumed to be exogenous. A more complete model would take into account the fact that the government simultaneously chooses the optimal size (and color) of beneficiaries and of taxpayers. See, for example, Sam Peltzman, Towards a More General Theory of Regulation, 19 J. Law & Econ. 211 (1976).

[9] Two important points should be noted regarding equation (1). First, it assumes a separability property in the constituent's vote function since the political support generated by agency i does not depend on the actions of agency i', $i \neq i'$. Second, equation (1) assumes that constituency tastes react only to changes in the *proportion* of blacks employed by the agency.

The total political support received by the government attributable to the actions of agency i is given by:

$$\overline{V}_i = q_i^q n_i V_i^b(Z_i, p_i^b) + (1 - q_i^b) n_i V_i^w(Z_i, p_i^b). \tag{3}$$

Since equation (3) can be derived for each federal agency, the government is assumed to maximize the total political support received from the constituencies of all agencies. This is defined by:[10]

$$\overline{V} = \sum_{i=1}^{k} \overline{V}_i = \sum_{i=1}^{k} [q_i^b n_i V_i^b(Z_i, p_i^b) + (1 - q_i^b) n_i V_i^w(Z_i, p_i^b)]. \tag{4}$$

The agency's output is produced by a process involving a fixed capital stock and the agency's labor force. It is assumed that black and white labor are perfect substitutes in the production of agency output. Hence the production function is given by:

$$Z_i = Z_i (L_i^w + L_i^b), \tag{5}$$

where L_i^j ($j = w, b$) is the number of race j workers employed by agency i.

Finally, the government is assumed to face a budget constraint:

$$T = \sum_{i=1}^{k} (r_i^w L_i^w + r_i^b L_i^b), \tag{6}$$

where T is (fixed) total revenues and r_i^j ($j = w, b$) is the wage rate of race group j in agency i. To derive the demand function for labor in agency i, the wage rates are viewed as parameters in the vote-maximization process. Once the demand schedule is obtained, the model will identify the equilibrium level of the wage differential between blacks and whites and the proportion of black employment by introducing a relative supply schedule for each agency.

The government maximizes its political support by choosing optimal levels of inputs L_i^w and L_i^b for each agency. The solution to this problem for agency i is shown in Figure 1. Suppose that the interagency competition for funds (which depends on the size of the agency's constituency, among other factors) leads to a budget allocation for agency i such that its

[10] An alternative way of interpreting (4) is to define the political support given by an individual of race j, Φ^j:

$$\Phi^j = \sum_i V_i^j(Z_i, p_i^b),$$

where the summation is conducted over all agencies in which the individual is a constituent. Using equation (4) it can be seen that $\overline{V}$, the total political support received by the government, is the sum of Φ^j over all individuals in society. If Φ^j is interpreted as the probability that the individual supports the incumbent government, then the objective function given by (4) gives the expected number of votes the government will receive in the next election.
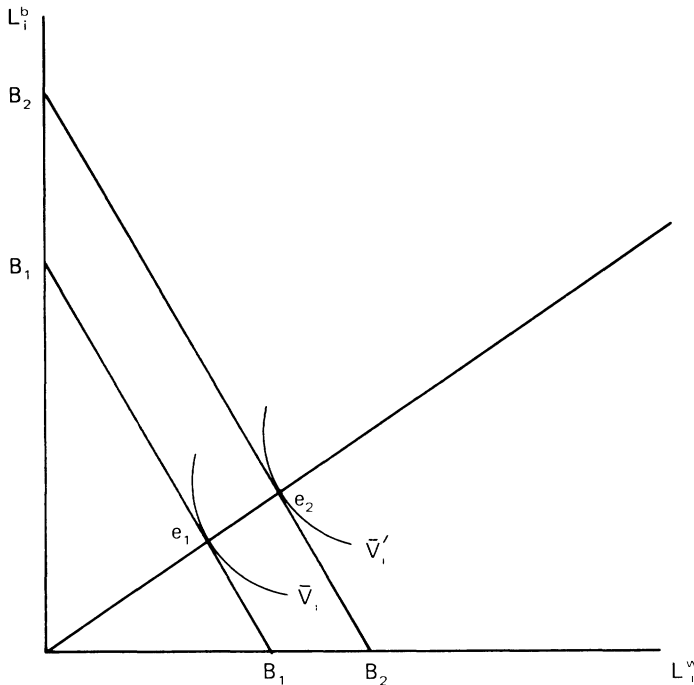
FIGURE 1

isocost curve is given by B_1B_1. The isovote function for the political support obtained from agency i is given by equation (3) evaluated at a fixed level of $\bar{V}_i$. The optimal hiring of labor inputs requires that for any given budget allocation, the agency's contribution to the government's political support be maximized, as in point e_1.

Note an important result of the model: the assumption that black and white labor are perfect substitutes in the production of agency output will not, in general, lead to the agency hiring either all black or all white workers. The reason for this result is that black constituents and white constituents perceive black and white labor as different since black constituents prefer dealing with black bureaucrats and white constituents prefer dealing with white bureaucrats. Thus in the production of votes, black and white labor will have different marginal productivities.[11]

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[11] A condition sufficient for the existence of an interior solution is that the negative utility imposed on whites (blacks) by the government's employment of an additional black (white) is offset by the gain in utility due to the additional output produced by the worker. In other words, the taste effects must be "weak."

The relative demand function for black labor can be easily derived if an additional technical assumption is made. In particular, if the expression in equation (3) is a homothetic function of black and white labor, the expansion path for the agency is linear (as shown in Figure 1). Hence the relative demand for blacks depends on the relative black wage and on factors which affect the curvature of the isovote function, x_i:

$$\frac{L_i^b}{L_i^w} = D\left(\frac{r_i^b}{r_i^w}, x_i\right) \tag{7}$$

The homotheticity assumption can be justified in two ways. First, if the white vote function, V_i^w, and the black vote function, V_i^b, are both homogeneous of the same degree, the agency's vote function, $\overline{V}_i$, will be homothetic.[12] Secondly, the homotheticity assumption greatly simplifies the empirical analysis by making the *relative* demand for black labor independent of both the size of the agency and of the characteristics of other agencies.[13]

By equating the marginal rate of substitution in the production of votes with the relative black wage, the government is in effect maximizing the utility received by the "average" constituent from agency output. This fact suggests an alternative interpretation for the underlying process. Suppose that in order to maximize votes the government appoints an "effective" agency management. To the extent that the appointed officials are chosen from representative members of the constituency, they will tend to reflect the constituency's tastes. If managers can influence the institutional structure through which the agency hires and places blacks, the resulting demand curve for blacks will depend on the relevant constituency characteristics. A powerful implication of this interpretation is that it is unnecessary to have physical proximity between constituents and bureaucrats in order to generate equation (7). It is not crucial for constituents to see the bureaucrats since the representative constituent managing the agency will make sure that the constituents' tastes are imposed on the agency's personnel policy.

The equilibrium relative black wage and employment in the agency can be determined by introducing a relative supply schedule giving the frac-

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[12] It is obvious that the sum of homogeneous functions of degree l is homogeneous of degree l. From Euler's Theorem it follows that: $V_Z^j [Z'L_w + Z'L_b] = l_j V^j$, where V^j is the vote function of a constituent of race j; $V_Z^j = \partial V^j/\partial Z$; l_j is the degree of homogeneity for vote functions of race group j; and the agency subscript i is omitted for simplicity. Using this equation, it can be shown that a sufficient condition for $\overline{V}_i$ to be homothetic is that the elasticity of political support with respect to agency output be the same for both race groups.

[13] Note that this result also depends on the separability property of the vote function, where the characteristics of other agencies do not affect the political support generated by agency i.

tion of black job applicants supplied to the agency at any given relative black wage:[14]

$$\frac{L_i^b}{L_i^w} = S\left(\frac{r_i^b}{r_i^w}, y_i\right), \tag{8}$$

where y_i are factors that shift the agency's relative supply curve. This vector may include the fact that certain agencies are concentrated in particular geographic regions and that blacks in that region may be over- or underrepresented. Agency relative supply curves also differ because blacks (or whites) may want to provide their labor to particular federal agencies. For example, blacks may be willing to supply their labor to agencies like the EEOC at lower wages than those required to employ them in other agencies or in the private sector. It should be stressed that the assumption of agency differences in the relative supply function is crucial for the analysis. In particular, unless supply schedules varied across agencies, labor market competition would ensure a constant black relative wage for all federal agencies.

The optimal relative black wage and employment is given by the simultaneous solution of the relative supply and demand schedules and is illustrated in Figure 2.[15] It should be clear that factors affecting the demand for blacks by the agency will lead to differences in relative black wages and employment. To illustrate these shifts, consider an increase in the fraction of the constituency that is black, q_i^b. It is easy to show that:

$$\frac{d(r_i^b/r_i^w)}{dq_i^b} > 0. \tag{9}$$

Since a constituency that is mainly black likes to see blacks employed in the agency, the marginal vote productivity of blacks is increased, leading to an increase in the relative demand for blacks in the agency, and to higher relative black wages and employment.

Another variable which is likely to influence the relative black wage is the fact that some agencies produce "affirmative action" output. That is, some agencies are primarily (or partly) responsible for enforcing affirmative action programs in the private sector. Define α_i as the orientation of the agency's output, with higher values of α_i indicating greater minority

[14] A necessary condition for the existence of a relative supply curve is that the elasticity of labor supply with respect to the wage rate be the same for both black and white workers. The empirical evidence on this point is mixed. See, for example, Income Maintenance and Labor Supply (Glen Cain & Harold Watts eds. 1973).

[15] An interesting theoretical curiosity is that the monopsony aspect of the agency does not affect the equilibrium relative black employment or relative black wage.
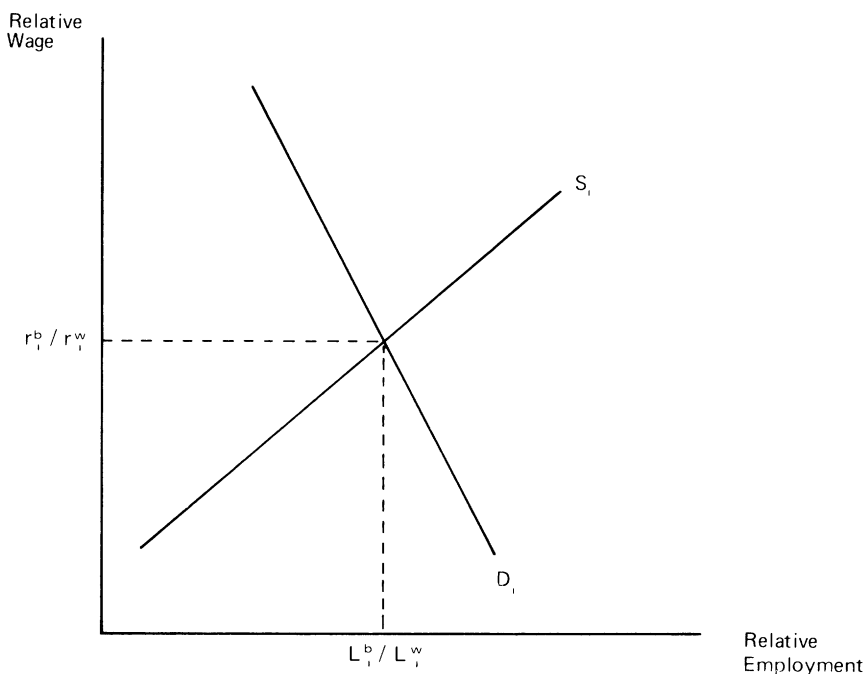
FIGURE 2

orientation. This parameter is likely to influence the constituent's political support so that equation (1) becomes $V_i^j = V_i^j(Z_i, p_i^b; \alpha_i)$.

To analyze the effects of α_i on the relative demand for blacks, it is assumed that black constituents like to see blacks employed particularly in agencies producing affirmative action. This taste effect arises because black constituents may think black bureaucrats will be more sympathetic to the output they are producing and hence push harder when implementing affirmative action programs in the private sector. Thus the hypothesis is:

$$V_{p\alpha}^b = \frac{\partial^2 V^b}{\partial p \, \partial \alpha} > 0, \tag{10}$$

where the agency subscript i is omitted for simplicity.

It is harder to hypothesize about the sign of $V_{p\alpha}^w$. For example, white constituents may benefit from knowing that the agency's affirmative action programs will be administered mainly by black bureaucrats. However, even these white constituents may cut back their support when the zealous bureaucracy starts enforcing quota systems and other forms of

"reverse discrimination" in the private sector. Hence $V_{p\alpha}^w$ may be positive or negative.

It can be shown that:

$$\text{sign } \frac{d(r_i^b/r_i^w)}{d\alpha_i} = \text{sign } [q_i^b V_{p\alpha}^b + (1 - q_i^b) \ V_{p\alpha}^w]. \tag{11}$$

Therefore the direction of the shift in demand due to an increase in α_i depends on the tastes of the average constituent. Thus if blacks form a sizable proportion of the constituency of minority-oriented agencies or if their taste effect is particularly strong, black tastes will dominate and the relative demand for blacks will increase.

It should be clear that although to focus ideas the model was developed in the case of racial discrimination, analogous results follow for sexual discrimination. The key assumption would be that the political support of constituents of a federal agency depends both on the output of the agency and on the sexual composition of the agency's bureaucracy as measured by p_i^f, the fraction of agency i's labor force that is female. The agency's relative demand curve for female labor can then be derived and is given by:

$$\frac{L_i^f}{L_i^m} = g\left(\frac{r_i^f}{r_i^m}, x_i'\right), \tag{12}$$

where L_i^j is employment of sex group j ($j = m, f$) in agency i; r_i^j is the group's wage rate; and x_i' is the set of exogenous variables which shift the relative demand curve for female labor. It is expected that x_i' includes variables like the sexual composition of the constituency and the nature of the agency's output.

III. DATA

The predictions of the model are tested using data from the Central Personnel Data File (CPDF) compiled by the Office of Personnel Management. The CPDF analyzed in this paper contains data for civilian workers employed by the federal government on December 31, 1979. It is composed of a 1 percent random sample from personnel records in the eight largest agencies, and of a 10 percent random sample for all other agencies.[16] Each individual record contains personal characteristics of the bureaucrat such as education, race, and sex and also includes informa-

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[16] The eight largest agencies are the Departments of Defense, Agriculture, Justice, Health, Education, and Welfare, Transportation, the Treasury, the Postal Service, and the Veterans Administration. A coding error in the creation of the data led to an 11 percent random sample from the Department of the Interior.

tion such as agency of employment, annual full-time earnings, and years of government service. The analysis in this paper is restricted to permanent, full-time civilian bureaucrats working in the United States.

Clearly the relative demand for black or female labor in each federal agency will depend on the characteristics of the agency's constituency. This section discusses the creation of proxies for the theoretical variables.

A.   The Racial and Sexual Composition of the Constituency

In previous work I experimented with several measures of the size of the constituency based either on counting the population of states where agency funds were spent or counting the number of employees in industries affected by the actions of the federal agency.[17] I found that both definitions of the size of the constituency had similar effects on agency wage levels. For the purpose of this analysis I define the constituency of a federal agency as the group of individuals employed in industries affected by the agency's actions. This suggests that the easiest proxy for the racial composition of the agency's constituency, q_i^b, is the racial composition of the labor force in affected industries. Thus, for example, the Civil Aeronautics Board (CAB) constituency is composed of workers in the air transportation industry. The variable q_i^b for the CAB would then be given by the percent minority in the air transportation industry's labor force. Similarly, q_i^b for the Department of Agriculture would be given by the fraction of agricultural workers that are minority. The racial breakdown of individuals in U.S. industries is published in the Department of Labor's *Employment and Earnings* so that for any given matching of agencies and affected industries q_i^b can be calculated.[18] The actual matching of agencies and industries is described in Appendix A and essentially follows the pattern described in the text.

For some major agencies—for example, the Defense Department, the Department of Health, Education, and Welfare, and the Postal Service—no natural constituencies can be easily identified. In earlier work I resorted to counting the population of states where agency expenditures were made and defining this as the agency's constituency. By analogy, it would seem that if most agency funds are spent on states with relatively large minority populations, the agency's constituency would be mainly black. Define:

$$q^b = \sum_l s_l b_l, \tag{13}$$

where s_l is the share of the agency's budget spent in state l, and b_l is the

[17] Borjas, *supra* note 3.
[18] U.S. Department of Labor. Employment and Earnings (Gov't Printing Office, 1980).

fraction of the state's population that is black.[19] Equation (13) equates the racial composition of the agency's constituency with the average fraction of blacks in states where the agency spends its money.[20]

By analogy, the sexual composition of the agency's constituency, q_i^f, is given by the fraction of the workers in the affected industries that are female. If this matching of industry and agencies could not be conducted, the empirical variable is defined by:

$$q^f = \sum_l s_l f_l \qquad (13')$$

where f_l is the fraction of state l's population that is female.

B. The Production of Affirmative Action

It was shown in Section II that the affirmative action orientation of an agency's output is likely to influence the demand for blacks and females in federal agencies. The special analysis of the U.S. Budget devotes a chapter to the civil rights activities of federal agencies.[21] Thus a good empirical counterpart of the theoretical variable can be obtained by looking at actual agency expenditures on civil rights activities.

Table 2 lists the civil rights outlays made by federal agencies in fiscal 1979. As can be seen, the federal government spent $486.5 million on such activities in fiscal 1979. These expenditures are made on programs designed to promote fair voting laws, fair housing, equal employment opportunity, and the conciliation and prevention of racial disputes. It is important to note that these expenditures do not, in general, refer to expenditures made by the agency on affirmative action programs for its own personnel. Instead they refer to expenditures made to promote civil rights activities in the private sector. Expenditures made by federal agencies on internal affirmative action programs are allocated to the budget of the EEOC. Thus the expenditure data avoid the simultaneity bias which would exist if agency expenditures on civil rights activities included the expenditures made to improve the status of the agency's minority or female labor force.

Two alternative variables are used in the empirical analysis to measure the minority orientation of the agency. The first is MINOR, which is set

[19] The data needed to calculate equation (13) for each agency are available in U.S. Community Services Administration, Geographic Distribution of Federal Funds in Summary (various issues 1978–80).

[20] There are a few exceptions to this framework for obtaining estimates of q_i^b. A complete discussion is contained in Appendix A.

[21] U.S. Office of Management and Budget, Special Analysis: Budget of the United States (Gov't Printing Office 1981).

TABLE 2
FEDERAL EXPENDITURES ON CIVIL RIGHTS ACTIVITIES

Agency	Fiscal 1979 Expenditure (in Millions)
Agriculture	6.5
Commerce	.1
Defense	47.0
Health, Education, and Welfare	50.4
Housing and Urban Development	5.2
Justice	32.2
Labor	47.0
Transportation	2.0
Office of Personnel Management	9.0
Commission on Civil Rights	10.2
Equal Employment Opportunity Commission:	
Expenditures on internal affirmative action	170.4
Expenditures on private-sector affirmative action	84.6
Postal Service	17.4
Small Business Administration	1.1
Other	3.4
Total	486.5

SOURCE.—U.S. Office of Management and Budget, Special Analyses: Budget of the United States Government 302 (Gov't Printing Office 1981).

equal to unity if the agency spends money pushing civil rights programs and zero otherwise. The second is CRATIO, defined as the fraction of the agency's budget spent on civil rights activities in the private sector.[22]

C.   The Role of the Agency's Bureaucracy

In the simple model developed in the previous section, the role of the bureaucracy as a politically powerful institution was ignored. It should be clear that the agency's bureaucrats have incentives to form interest groups or "unions" designed to improve working conditions. Presumably the more homogeneous the agency's bureaucracy the more cohesive its interests and the more likely that a powerful union will be formed to represent its interests.[23]

It is well known that one of the most important effects of labor unions is to reduce wage dispersion in the firm.[24] To the extent that agencies with

[22] In constructing CRATIO for the Equal Employment Opportunity Commission, I include only expenditures made promoting affirmative action programs in the private sector.

[23] For a discussion of the role of homogeneity of interests in determining the strengths of a bureaucratic organization, see Borjas, *supra* note 3.

[24] See, for example, Richard B. Freeman, Unionism and the Dispersion of Wages, 34 Indus. & Lab. Rel. Rev. 3 (1980).

TABLE 3
VALUES OF CHARACTERISTICS FOR SELECTED AGENCIES

Agency	q_i^b	q_i^f	MINOR	CRATIO	σ(EDUC)
Agriculture	.09	.20	1	.0003	2.34
Defense	.12	.51	1	.00002	2.31
Energy	.08	.15	0	.0	2.51
Health, Education, and Welfare	.12	.51	1	.0003	2.46
Housing and Urban Development	.08	.07	1	.0006	2.24
Interior	.04	.12	0	.0	2.51
Labor	.13	.26	1	.0021	2.39
Transportation	.13	.19	1	.0001	1.97
Equal Employment Opportunity Commission	.50	.50	1	.9196	2.70
Federal Communications Commission	.13	.47	0	.0	2.81
Interstate Commerce Commission	.10	.12	0	.0	3.02
National Aeronautics and Space Administration	.10	.19	0	.0	2.39
National Science Foundation	.12	.49	0	.0	2.92
Postal Service	.12	.52	1	.0001	1.59

powerful bureaucratic organizations resemble labor unions, these agencies will have not only less wage inequality but also smaller racial and sexual wage differentials. Presumably in agencies where bureaucrats are similar and share identical goals, it would be easier for the various groups to coalesce and form a cohesive interest group. A variable which measures this similarity is the standard deviation of educational attainment among bureaucrats in the agency, $\sigma(EDUC)$.[25] The smaller $\sigma(EDUC)$ the more powerful the bureaucracy is likely to be, and the smaller the racial and sexual wage differentials.

Table 3 presents estimates of the variables introduced in this section for a selected group of federal agencies.

IV. EMPIRICAL RESULTS

The empirical analysis is restricted to bureaucrats whose CPDF records reported the key variables needed for the analysis. Before proceeding to test the implications of the political model, it is instructive to obtain a detailed view of racial and sexual wage differentials in federal agencies. Table 4 presents relevant statistics on the economic status of minorities and women in the federal government and in each of the thirty-one largest federal agencies. The thirty-one agencies included in Table 4 compose over 95 percent of total employment in the federal government. The first column gives the average log annual (full-time) earnings for white males in each sample. Since the average white annual wage is relatively high it should be clear that even small percentage wage differentials involve sizable dollar differentials.

To measure the wage differential among white males and the other sex and race groups holding observable skills constant, a simple regression technique is used. In particular, the following earnings function is estimated within each federal agency:

$$\ln r_h = Y_h \alpha + \beta R_h + \epsilon_h \qquad (14)$$

where r_h denotes annual full-time earnings of individual h; Y_h is a vector of h's socioeconomic characteristics; and R_h is set equal to unity if the individual is a member of a particular sex and race group and zero if he is a white male. Equation (14) will be estimated three times in each agency so as to make pairwise comparisons between white males and each of the other groups.[26] In other words, a regression will first be estimated in the

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[25] The variable $\sigma(EDUC)$ is constructed from the CPDF. It should be noted that in calculating the variables introduced in this section, agencies with fewer than 200 employees were pooled and treated as a single agency. This mainly affected a wide assortment of presidential study commissions.

[26] The pairwise regressions are used (instead of a single pooled regression) to allow direct comparisons between the "discrimination coefficients" reported in Table 4 and the many

sample of males. This will provide an estimate of the unexplained wage
differential between white males and black males. This procedure is then
repeated to obtain the remaining sex and race wage differentials (relative
to white males). The vector Y includes: education (defined as a vector of
21 dummy variables), years of experience in the federal sector, years
of experience in the nonfederal sector (defined as Age-Education-
Experience in the federal sector 6), region of employment, whether vet-
eran, and whether physically handicapped.

Table 4 gives the estimated $\hat{\beta}_{bm}$, $\hat{\beta}_{wf}$, and $\hat{\beta}_{bf}$, where $\hat{\beta}_{bm}$ is the estimated
β for black males; $\hat{\beta}_{wf}$ is the statistic for white females; and $\hat{\beta}_{bf}$ is the
statistic for black females. As can be seen, in the pooled sample we find
that, holding skills constant, there exist significant wage differentials by
sex and race so that white males earn approximately 12 percent more than
black males and 22–27 percent more than females. The most striking
finding is the large variance in the unexplained wage differentials across
federal agencies. The white male/black male wage gap ranges from ap-
proximately zero to over 30 percent. Similarly, the standardized log wage
differential between white males and white females ranged from about 3
percent to 45 percent, while the standardized log wage differential be-
tween white males and black females ranges from 2 percent to about 53
percent.

The political model developed in Section II predicts that this variation
across agencies in the relative earnings of blacks and females is a response
to shifts in the political usefulness of hiring these groups in federal agen-
cies. To test these theoretical implications, the empirical properties of the
relative demand functions for blacks and females are now analyzed.

A.   The Relative Demand Function for Black Males

The agency's relative demand function for black males is given by:

$$\ln \frac{r_i^{bm}}{r_i^{wm}} = \alpha_0 + \alpha_1 x_i + \alpha_2 p_i^b + v_i, \tag{15}$$

where r_i^j is the (full-time) annual earnings of race/sex group j in agency i; x_i
is the set of variables shifting the agency's relative demand curve for

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empirical studies in the literature which usually focus on comparisons between two particu-
lar sex/race groups. Moreover, this simple way of measuring racial and sexual wage differ-
entials compares very favorably with the more general method of allowing both slope and
intercept effects and then calculating the wage differential given the group's average
socioeconomic characteristics. In fact, the correlation coefficient between the wage differ-
ential given by this methodology and the simpler method in (14) is over .95 for all sex/
race groups.

TABLE 4

MEASUREMENT OF WAGE DIFFERENTIALS* (Relative to White Males)

Agency	$\ln r_i^{wm}$	$\hat{\beta}_{bm}$	$\hat{\beta}_{wf}$	$\hat{\beta}_{bf}$	Number of Observations in Agency
Cabinet agencies:					
Agriculture	9.9382	.0002 (.00)	-.1722 (-8.10)	-.2190 (-5.36)	898
Commerce	10.2021	-.1490 (-9.62)	-.2425 (-17.05)	-.3395 (-19.41)	2,945
Defense	9.9540	-.1161 (-14.74)	-.2897 (-38.33)	-.3494 (-31.18)	7,702
Energy	10.2619	-.2054 (-7.82)	-.3752 (-19.89)	-.4192 (-14.99)	1,789
Health, Education, and Welfare	10.0935	-.1403 (-4.51)	-.1282 (-6.25)	-.2504 (-9.58)	1,378
Housing and Urban Development	10.2594	-.1258 (-5.80)	-.3508 (-16.22)	-.4575 (-18.74)	1,432
Interior	10.0108	-.1059 (-11.58)	-.2206 (-23.42)	-.2822 (-21.99)	6,188
Justice	10.0725	-.0799 (-2.33)	-.2316 (-7.66)	-.2643 (-6.83)	511
Labor	10.1952	-.1222 (-5.85)	-.3861 (-21.46)	-.5353 (-25.14)	2,161
State	10.4508	-.1915 (-5.44)	-.1998 (-6.24)	-.3208 (-8.26)	658
Transportation	10.2181	-.0718 (-1.99)	-.4662 (-12.06)	-.5190 (-8.23)	1,145
Treasury	10.0638	-.1312 (-4.38)	-.2053 (-9.28)	-.3619 (-12.42)	1,947
Independent agencies:					
Environmental Protection Agency	10.1728	-.0076 (-.23)	-.1343 (-6.38)	-.2714 (-8.91)	1,043
Equal Employment Opportunity Commission	10.1089	.0130	-.0984	-.1910	257

Agency					N
Federal Communications Commission	10.2757	−.0131 (.22)	−.0817 (−.95)	−.2390 (−2.30)	189
Federal Deposit Insurance Corporation	10.1150	−.1620 (−.17)	−.1828 (−1.43)	−.2517 (−3.32)	316
Federal Home Loan Bank Board	10.2279	−.3548 (−2.95)	−.3648 (−4.57)	−.4798 (−3.93)	133
Federal Trade Commission	10.4289	−.1154 (−3.63)	−.1185 (−4.16)	−.2606 (−5.44)	162
General Accounting Office	10.3072	−.1108 (−1.66)	−.1079 (−1.88)	−.2514 (−2.91)	486
General Services Administration	9.9153	−.1327 (−2.90)	−.2095 (−3.76)	−.3031 (−5.77)	3,123
Government Printing Office	10.1562	−.3326 (−10.79)	−.4462 (−12.80)	−.5359 (−17.62)	711
International Communications Agency	10.2751	−.2661 (−14.67)	−.1401 (−10.86)	−.3349 (−19.20)	332
Interstate Commerce Commission	10.2934	−.2626 (−6.30)	−.1941 (−3.42)	−.5264 (−6.71)	163
National Aeronautics and Space Administration	10.3578	−.0975 (−2.76)	−.2970 (−2.62)	−.3267 (−6.81)	2,214
National Labor Relations Board	10.3834	−.1283 (−5.81)	−.0934 (−20.13)	−.2465 (−14.66)	253
Nuclear Regulatory Commission	10.5284	−.1184 (−2.47)	−.2878 (−2.48)	−.4621 (−4.17)	273
Office of Personnel Management	10.1284	−.1260 (−2.45)	−.1544 (−5.52)	−.2142 (−5.52)	605
Postal Service	9.8103	−.0341 (−2.70)	−.0271 (−4.29)	−.0163 (−5.08)	2,985
Securities and Exchange Commission	10.3641	−.0877 (−6.43)	−.1996 (−2.72)	−.3110 (−1.71)	186
Smithsonian Institution	10.0345	−.2431 (−1.35)	−.3108 (−4.16)	−.4210 (−4.12)	273
Veterans Administration	9.8170	−.1116 (−6.04)	−.0861 (−5.04)	−.1302 (−5.50)	1,947
Pooled Government†	9.9718	−.1188 (−6.47)	−.2179 (−4.84)	−.2702 (−5.82)	19,939
		(−21.92)	(−41.17)	(−39.07)	

* The t-ratios are given in parentheses.
† The statistics for the pooled sample are estimated from a 1 percent random sample of all federal agencies.

black males; p_i^b is the percentage of blacks in the agency's labor force; and v_i is a statistical residual.[27]

Equation (15) cannot be estimated directly since it requires data on the standardized black male relative wage for all federal agencies. An alternative method of estimation can be derived by pooling the observations of white men and black men across all federal agencies. This yields a hedonic earnings function of the form:

$$\ln r = Y\beta_1 + \beta_2 R + \epsilon, \tag{16}$$

where Y is the vector of socioeconomic characteristics described earlier and R is a dummy variable set equal to unity if the individual is a black male and zero if white male. Both the political model and the empirical work in Table 4 imply that β_2 can be viewed as a random variable across federal agencies. Since β_2 estimates the relative wage differential between black men and white men, substituting (15) in (16) yields:

$$\ln r = Y\beta_1 + \alpha_0 R + \alpha_1(Rx_i) + \alpha_2(Rp_i^b) + \epsilon'. \tag{17}$$

Equation (17), therefore, indicates that the relative demand function can be identified by pooling all observations and including interactions between the race dummy and each of the shift variables and an interaction between R and the percentage of black employment in the agency. Of course, since p_i^b is an endogenous variable it will be correlated with the disturbance in (17). An instrument for p_i^b is obtained by regressing the percentage of black employment in the agency on all the exogenous variables of the model and on variables which affect the relative supply of blacks to agencies.[28] The predicted $\hat{p}_i^b$ is then used in the estimation of equation (17).

It is very important to note that the pooled estimator suggested by (17) is identical to the two-stage estimator in which an earnings function is estimated within each agency and the estimated racial wage gap, $\hat{\beta}_2$, is then regressed across agencies on the variables x_i and p_i^b.[29] Note also that

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[27] Note that to simplify the empirical work p_i^b is used rather than the proportion of black males in the agency.

[28] The independent variables in this regression are: a constant term; percentage of agency's employment in the District of Columbia; average age, education, and job tenure of employees in the agency; standard deviation of age, education, and job tenure of employees in the agency; the difference in the average educational attainment of whites and blacks in the agency; the percentage of the agency's labor force that is blue collar; the fraction of the constituency that is minority; the fraction of the agency's budget spent on civil rights activities; the number of states in which the constituents live; and the percentage of the agency's budget spent in grants to individuals or localities. For a discussion of these variables see Borjas, *supra* note 3.

[29] For a proof, see Takeshi Amemiya, A Note on a Random Coefficients Model, 19 Int.

TABLE 5
ESTIMATES OF RELATIVE DEMAND FUNCTIONS FOR BLACK MALES*
(Dependent Variable $= \ln[r^{bm}/r^{wm}]$)

VARIABLE	POOLED SAMPLE		INDIVIDUALS NOT EMPLOYED BY EEOC OR CCR	
	1	2	3	4
CONSTANT	.0155	.2160	.1427	.2189
	(.52)	(7.79)	(4.52)	(7.88)
q_i^b	.5803	.2863	.1645	.2856
	(8.49)	(3.80)	(2.07)	(3.65)
MINOR	.0562	. . .	.0421	. . .
	(6.86)		(5.10)	
CRATIO	. . .	.5362	. . .	1.2368
		(11.36)		(.47)
$\sigma(\text{EDUC})$	$-.0521$	$-.0844$	$-.0581$	$-.0795$
	(-4.40)	(-7.64)	(-4.90)	(-7.17)
$\hat{p}_i^b$	$-.5224$	$-.7982$	$-.7770$	$-.8560$
	(-13.62)	(-20.22)	(-17.80)	(-20.84)
R^2	.628	.629	.631	.630
Number of observations	29,515	29,515	29,400	29,400

* The t-ratios are given in parentheses. The variables pertaining to the individual held constant in the regression are: an educational attainment vector, nonfederal experience, federal experience, nonfederal experience squared, federal experience squared, an interaction between federal and nonfederal experience, whether individual lives in North, North-Central, South, or West (omitted dummy is the District of Columbia), veteran status, handicap status, whether individual refuses to have handicap status in personnel records. The variables pertaining to the agency held constant in the regression are: the standard deviation of education among employees in the agency, the size of the agency's constituency, the number of states in which the constituency is located, the percentage of the agency's budget spent as grants to individuals and localities, and the percentage of agency employment located in the District of Columbia.

the disturbances ϵ' ($\epsilon' = \epsilon + Rv$) in equation (17) are heteroscedastic. The correction for heteroscedasticity in this model is to weigh all black observations by the factor $[1 + (\sigma_v^2/\sigma_\epsilon^2)]^{-\frac{1}{2}}$, assuming ϵ and v are independently distributed. Since the ratio of variances $\sigma_v^2/\sigma_\epsilon^2$ is unknown, a search procedure was conducted over alternative values of the ratio and the estimate which minimized the error sum of squares was chosen.[30] This estimate was $\sigma_v^2/\sigma_\epsilon^2 = .21$.

The estimated relative demand functions for black males are presented in Table 5. In all regressions the vector of variables held constant include

Econ. Rev. 793 (1978); and George J. Borjas, On Regressing Regression Coefficients, J. Statistical Plan. & Inference (1982), in press.

[30] It can be shown that the search procedure leads to maximum likelihood estimates of the parameters of the model; see G. S. Maddala, Econometrics (1977).

Y, the socioeconomic characteristics described earlier, and a few variables which explain level differences in wage rates across agencies.[31] Column 1 presents the basic regression using MINOR (= 1 if the agency makes expenditures on civil rights activities), while column 2 uses CRATIO (percent of the agency's budget spent on civil rights activities). As can be seen, all of the coefficients in column 1 have the right sign and are statistically significant. For instance, the positive coefficient of q_i^b indicates a strong increase in the relative demand for blacks in agencies with predominantly black constituencies. Its magnitude indicates that an increase of 10 percentage points in q_i^b is associated with a 5.8 percent increase in the relative black wage.

The coefficient of MINOR is also strongly positive. The results indicate that blacks working in minority-oriented agencies have a relative wage rate that is 5.6 percent higher than blacks working in other agencies. The interpretation suggested by the model is that constituents of agencies involved in the enforcement of affirmative action programs in the private sector like to see blacks employed particularly in those agencies.

Note also that the coefficient of σ(EDUC) is negative and significant. To the extent that homogeneity of bureaucrats allows a stronger union, and that unions narrow wage inequality in a firm, the negative effect of σ(EDUC) indicates that indeed racial wage differentials are reduced in these agencies. Finally, the coefficient of $\hat{p}_i^b$ is strongly negative. This confirms the theoretical prediction that the relative demand curve for black labor is downward sloping.

Column 2 reestimates the relative demand function using CRATIO to proxy for the minority orientation of the agency. The results are qualitatively similar to those in column 1. The coefficient of CRATIO indicates that a 10 percentage-point increase in CRATIO increases the relative black wage by about 5.4 percent. This result, however, is subject to an important qualification: Table 3 shows that the value of CRATIO for the EEOC greatly exceeds the values for the other agencies. Thus the results in column 2 are likely to be sensitive to these outlying observations. For this reason the results in column 1 may be more convincing since the use of MINOR assigns a value of unity to any agency making civil rights expenditures and no outlying observations are created.

An alternative way of controlling for this problem is given in columns 3 and 4 of Table 5 where the relative demand functions are reestimated after

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[31] The variables controlling for agency differences in wage levels are: the size of the constituency, the number of states in which the constituents live, the percentage of the agency's budget distributed in direct grants to individuals and localities, the standard deviation of education, and the percentage of the agency's labor force located in the District of Columbia SMSA. See Borjas, *supra* note 3.

deleting individuals employed in either the EEOC or the Commission on Civil Rights (CCR) from the sample. Even though the results are not as strong statistically as those reported earlier, all the coefficients have the correct signs. Thus the model explains the variability in the demand for blacks even among agencies not primarily concerned with the production of affirmative action.

At this point it is worth pausing to investigate the substantive implications of these conclusions. The estimated relative demand functions clearly indicate that the employment of minorities in federal agencies depends on how politically valuable the minority bureaucrats are to the government.[32] This finding implies a very important result. The empirical discrimination literature seems to have reached an impasse on the question of the measurement of wage discrimination. In particular, the standardized wage differentials reported in Table 4 can be interpreted either as the extent of true discrimination against black males or as a wage differential due to unobserved differences in skill between blacks and whites. The result in Table 5 provides strong evidence that these "discrimination coefficients" are related to variables describing the agency's characteristics. This result is unable to shed light on the question of whether or not the unexplained racial wage differential measures true discrimination. However, it is unnecessary to resolve this empirical problem in order to understand minority employment policy in the federal bureaucracy. An important lesson from this study is that observed racial wage differentials between statistically similar black and white workers provide important information about federal employment policies.

B.   The Relative Demand Function for Females

Pooling all white male and white female observations across agencies, and repeating the process which led to (17) yields:

$$\ln r = Y\beta_1 + \gamma_0 S + \gamma_1(Sx_i^f) + \gamma_2(Sp_i^f) + v', \tag{17'}$$

where S is a dummy variable set equal to unity if the individual is a white female and zero if white male, x_i^f is the vector of variables which shift the relative demand for white females, and p_i^f is the percent of females em-

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[32] It could be argued that the results in Table 5 are consistent with an alternative explanation. In particular, suppose minority bureaucrats prefer to hand out the benefits to minorities in the private sector. This creates incentives for private sector firms to adjust the color of their workers accordingly, thus leading to the effects observed in Table 5. This argument, however, ignores *why* the government placed minorities in some agencies in the first place. To explain this initial placement, it is necessary to introduce the objectives of the government into the analysis.

TABLE 6

ESTIMATES OF RELATIVE DEMAND FUNCTIONS FOR WHITE FEMALES*

(Dependent Variable = $\ln[r^{wf}/r^{wm}]$)

VARIABLE	1		1'	
	Coefficient	t-Ratio	Coefficient	t-Ratio
CONSTANT	−.1077	(−3.77)	−.1114	(−3.99)
MINOR	−.0135	(−2.56)	. . .	. . .
CRATIO	. . .	. . .	.1539	(4.34)
q_i^f	.0629	(3.90)	.0516	(3.24)
$\sigma(\text{EDUC})$	−.0694	(−5.92)	−.0657	(−5.70)
$\hat{p}_i^f$	.0368	(1.07)	.0131	(.37)
R^2		.685		.685
Number of observations		33,656		33,656

* See Table 5 note for the list of variables held constant in the regression.

ployed in the agency's labor force. As before, since p_i^f is correlated with the disturbance, an instrument, $\hat{p}_i^f$, is used in the estimation. Note that the vector of coefficients γ gives the relative demand function for white females. It should be clear that by pooling white males and black females across agencies the same methodology can be used to estimate the relative demand function for black females.

The estimated relative demand functions for white females are presented in Table 6 and those for black females are presented in Table 7. In both tables, column 1 presents the basic regression using MINOR, while column 1' presents the regression using CRATIO. The results for white females are mixed. The effect of q_i^f (the percent of the agency's constituency that is female) is strongly positive, indicating that agencies with mainly female constituencies have a higher demand for female labor. Similarly, the effect of $\sigma(\text{EDUC})$ is strongly negative, suggesting that strong unions narrow wage inequality within the agency.

The remaining coefficients in Table 6, however, do not work out as expected. For example, the sign of MINOR is negative, yet minority orientation has the expected positive sign when it is measured by CRATIO. Moreover, the coefficient of $\hat{p}_i^f$ is insignificantly different from zero, so that the negative slope of the relative demand curve for white females is not confirmed by the data.

The estimates of the demand function for black females (columns 1 and 1' in Table 7) are more reasonable. All of the coefficients have the correct sign and are generally statistically significant. Thus the relative wage of black women is higher if they are employed in agencies where: (a) the constituency is predominantly female, (b) the agency produces affirmative action, and (c) the bureaucracy is homogeneous.

TABLE 7
ESTIMATES OF RELATIVE DEMAND FUNCTIONS FOR BLACK FEMALES*
(Dependent Variable $= \ln[r^{bf}/r^{wm}]$)

INDEPENDENT VARIABLE	REGRESSION NUMBER					
	1	2	3	1'	2'	3'
CONSTANT	-.1385	-.1089	-.1285	-.0572	.0610	.0258
	(-4.16)	(-3.47)	(-3.81)	(-1.74)	(1.89)	(.76)
MINOR	.0284	.0231	.0242	...	...	...
	(3.97)	(3.11)	(3.24)			
CRATIO	...	...	...	.2054	.5367	.5786
				(7.87)	(11.42)	(12.04)
q_i^f	.0536	...	.0368	.0415	...	.0916
	(2.48)		(1.57)	(1.91)		(3.85)
q_i^b	...	.1654	.1306	...	-.3152	-.5017
		(2.61)	(1.90)		(-7.56)	(-5.73)
σ(EDUC)	-.0876	-.0979	-.0888	-.1028	-.1147	-.0990
	(-6.18)	(-7.66)	(-6.26)	(-7.49)	(-9.21)	(-7.22)
$\hat{p}_i^f$	-.0408	...	-.0483	-.1243	...	-.0767
	(-.89)		(-1.00)	(-2.71)		(-1.60)
$\hat{p}_i^b$	...	-.0651	-.0468	...	-.3681	-.2954
		(-1.75)	(-1.22)		(-4.64)	(-7.03)
R^2	.685	.685	.685	.685	.686	.686
Number of observations	28,677	28,677	28,677	28,677	28,677	28,677

* The t-ratios are given in parentheses. See Table 5 note for the list of variables held constant in the regression.

In fact, the analysis of black females' relative wage allows a deeper investigation since their employment is affected by both the sexual and racial characteristics of the agency's constituency and bureaucracy. In columns 2 and 2' of Table 7, the relative demand function is reestimated after substituting q_i^f by q_i^b, and substituting $\hat{p}_i^f$ by $\hat{p}_i^b$. The results indicate (when using MINOR) that a predominantly black constituency increases the demand for black female labor in the agency.[33] Further, the relative demand for black females is a negative function of black employment in the agency.

Finally, columns 3 and 3' of Table 7 estimate the relative demand function for black females by including both sexual and racial agency characteristics in the exogenous vector of variables which shift relative demand. In column 3 (using MINOR) all of the variables have the expected sign so that the demand for black female labor increases in agencies with predominantly black constituencies, predominantly female constituencies, and affirmative action orientation. These results, therefore, yield an important conclusion: black females earn less than white males both because they are black and because they are women.[34]

In summary, these findings show that the political approach provides a useful framework for understanding federal policy regarding the employment of women. It is worth reemphasizing the fact that political variables—apparently unrelated to individual skills—explain the variation in the standardized sexual wage differential across federal agencies. Hence the wage differential between statistically similar men and women provides extremely useful information about the employment policies of the federal government.

V. Summary

This paper has presented an analysis of employment discrimination in the federal bureaucracy. It differs from earlier studies by focusing on whether the patterns of discrimination exhibited by the federal bureaucracy can be understood by assuming that the government's objective is to maximize its political support. More generally, the paper attempts to go beyond the descriptive statistics so common in the discrimination literature to an analysis of the structural determinants of discriminatory behavior.

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[33] Note, however, that using CRATIO to proxy for the orientation of the agency's output changes the sign of q_i^b. This change is puzzling but may be due to a high degree of collinearity between q_i^b and CRATIO.

[34] It should be noted that the deletion of individuals employed by the EEOC or CCR does not change any of the qualitative conclusions in Tables 6 and 7.

The basic empirical finding is that the relative (to white males) wages of blacks and women employed by the federal government vary significantly among the various federal agencies. The analysis then explores whether these differences are consistent with those suggested by the political approach to government behavior. It is seen that the relative wage of black males is higher in agencies with heavily black constituencies and in agencies which make expenditures in enforcing affirmative action programs in the private sector. Similarly, the relative wage of women in federal agencies also depends on the sexual composition of the constituency and on the nature of the agency's output. Further, the analysis of the relative wage of black women reveals that their demand curve is shifted by both sexual and racial characteristics.

These findings have important implications for the interpretation of racial and sexual wage differentials among similarly skilled workers. In particular, the empirical analysis shows that these statistics are related to characteristics of the agency's constituency. This fact suggests that characteristics of the firm and its market provide unique opportunities to expand both the theoretical and empirical study of employment discrimination in the private sector.

APPENDIX A

This Appendix describes the construction of q_i^b and q_i^f, the fraction of the constituency that is black or female. Before calculating these variables, the constituency of the federal agency must be defined. The following classification was used:

AGENCY	CONSTITUENCY
Agriculture	Employees in agriculture industry
Civil Aeronautics Board	Employees in air transportation industries
Commodity Futures Trading Commission	Employees in security, commodity brokerage, and investment companies
Energy	Employees in coal mining, crude petroleum and natural gas extraction, petroleum and coal products manufacturing, electric light and power, electric and gas utilities, and gas and steam supply-system industries
Farm Credit Administration	Same as Agriculture
Federal Communications Commission	Employees in communication industry
Federal Deposit Insurance Corporation	Employees in banking industry

AGENCY	CONSTITUENCY
Federal Labor Relations Authority	Same as Department of Labor
Federal Maritime Commission	Employees in water transportation industry
Federal Mediation and Conciliation Service	Same as Department of Labor
General Services Administration	Employees of the federal government
Housing and Urban Development	Employees in construction industry
Interior	Employees in mining industry
Interstate Commerce Commission	Employees in trucking, warehousing, and railroad industries
Labor	Individuals belonging to a union
Merit System Protection Board	Employees of the federal government
National Aeronautics and Space Administration	Employees in aircraft and parts industries
National Credit Union Administration	Employees in credit agencies
National Endowment for the Arts and Humanities	Employees in theaters and motion pictures and miscellaneous entertainment industries
National Labor Relations Board	Same as Department of Labor
National Science Foundation	Employees in colleges and universities
Nuclear Regulatory Commission	Employees in electric light and power, electric and gas utilities
Office of Personnel Management	Employees in the federal government
Railroad Retirement Board	Employees in railroad transportation industry
Securities and Exchange Comm.	Employees in security, commodity brokerage, and investment companies
Soldiers and Airman's Home	Individuals who are veterans
Transportation	Employees in transportation industry
Veterans Administration	Individuals who are veterans

For all these agencies, q_i^b is defined as the percent minority in each of the affected groups, while q_i^f is defined as the percent female in each of the affected groups.

For all other agencies with more than 200 employees, q_i^b and q_i^f were defined by:

$$q_i^b = \sum_l s_l b_l \qquad\qquad (A1)$$

and

$$q_i^f = \sum_l s_l f_l, \tag{A2}$$

where s_l is the share of the agency's budget spent in state l; b_l is the fraction of the population in state l that is minority; and f_l is the fraction that is female. For five agencies, the State Department, the Government Printing Office, the International Trade Commission, the Occupational Safety and Health Review Commission, and the Smithsonian Institution, the fact that an overwhelming portion of their funds was spent in the District of Columbia led to very high estimates of q_i^b. To avoid this problem, the average q_i^b was used to represent the racial composition of the constituencies of these agencies.

Finally, due to the nature of the Commission on Civil Rights and the Equal Employment Opportunity Commission, the variables q_i^b and q_i^f were arbitrarily set equal to 50 percent. This avoids giving these agencies a value for the variables that would be extremely different from that of other agencies, so in effect the regressions in Section IV underestimate the effect of the racial and sexual composition of the constituency on relative demand functions. Similarly, in the case of the Veterans Administration, there are very few female veterans, yet at the same time wives of veterans receiving aid are entitled to substantial benefits. To avoid a bias for this agency q_i^f was estimated by using equation (A2).[35]

[35] Data sources: Joseph R. Antos, Mark Chandler, & Wesley Mellow, Sex Differences in Union Membership, 33 Indus. & Lab. Rel. Rev. 162 (1980); U.S. Dep't of Commerce, Census Report, Veterans (Gov't Printing Office 1970); U.S. Community Services Administration, *supra* note 19; U.S. Dep't of Labor, *supra* note 18.