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## **The Effects of Title VII of the Civil Rights Act of 1964 on Women's Entry into Nontraditional Occupations: An Economic Analysis\***

Andrea H. Beller\*\*

Most of the earnings gap between men and women can be explained by occupational differences rather than by unequal pay within the same occupation.<sup>1</sup> Earnings and occupational segregation are related by the

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Professor Beller has served as Research Associate at the Mary Ingraham Bunting Institute of Radcliffe College, the Institute for Research on Poverty at the University of Wisconsin-Madison, the Economics Department of the State University of New York (SUNY)-Binghamton, and has been a lecturer in Economics at Tufts University, University of Wisconsin-Madison and SUNY-Binghamton. Professor Beller is currently Assistant Professor of Family Economics at the University of Illinois at Urbana-Champaign, a position she has held since 1979.

1. See, e.g., Fuchs, *Differences in Hourly Earnings Between Men and Women*, Monthly

empirical finding that earnings are higher in traditionally male occupations than in predominantly female or integrated occupations. Human capital differences<sup>2</sup> in education and training between individuals explain only some of this earnings differential.<sup>3</sup> Most economists would agree that the unexplained portion is largely due to discrimination; thus, increasing women's access to nontraditional occupations should help to increase their earnings.

Before we can reduce occupational segregation, however, we must change the behavior that causes it. A law that prohibits and provides incentives to reverse that behavior can effectively lessen the extent of segregation. Title VII of the 1964 Civil Rights Act<sup>4</sup> prohibits behavior that economic theories of discrimination suggest is the cause of occupational segregation by sex. Since Title VII has been enforced for more than a decade, we can expect to see it working. Direct empirical evaluation of its effects on occupational segregation would show if this has been the case.

One approach would be simply to look at gross changes; if they are favorable, we could argue that the law has been effective and if they are unfavorable we could argue that the law has been ineffective. This method was used in a widely cited report of the United States Commission on Civil Rights and, to some extent, in a recent law review article on a related topic.<sup>5</sup> But this approach is only a first approximation and need not yield the correct answer. Forces for change other than the law have also been operating during the same period. These other factors must be taken into account by holding them constant in a statistical sense.<sup>6</sup>

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Lab. Rev., May 1971, at 9; Oaxaca, *Male-Female Wage Differentials in Urban Labor Markets*, 14 Int'l Econ. Rev. 693, 693-709 (1973).

2. Economists use the term "human capital" to describe the productive capacity of human beings, that is, the skills, knowledge and abilities that enable one to be productive in a variety of settings, especially in the workplace, but also in the home. For a more thorough discussion, see, e.g., Schultz, *Investment in Human Capital*, 51 Am. Econ. Rev., Mar. 1971, at 1.

3. Beller, *Occupational Segregation by Sex: Determinants and Changes*, 17 J. Hum. Resources 371, 371-92 (1982).

4. 42 U.S.C. §§ 2000e to 2000e-17 (1976 & Supp. V 1981).

5. U.S. Comm'n on Civil Rights, *Social Indicators of Equality for Minorities and Women* (1978); Note, *Equal Pay, Comparable Work, and Job Evaluation*, 90 Yale L.J. 657 (1981) [hereinafter cited as Note].

6. Multiple regression analysis is generally used for this purpose. Speaking generally, multiple regression analysis is a statistical technique for measuring or estimating the effects of a particular factor on a particular outcome by holding other factors which might influence that outcome constant: "Multiple regression attempts to explain the variation in a dependent variable in terms of the variation in each of a set of independent or explanatory variables." W. Fairley & F. Mosteller, *Statistics and Public Policy* 144 (1977).

Gross statistics suggest that "federal prohibitions against sex-based discrimination in compensation have [been ineffective in reducing] the disparity between the earnings of male and female workers in the United States." But, in addition to reflecting the impact of Title VII, the gross statistics also reflect the effects of other factors working to *increase* the earnings gap between men and women, and thus counteracting Title VII. One such factor is the increased rate of entry of women into the labor force. In general, new entrants into the labor market have lower skills and command lower wages than those already in the labor market. Thus, at least some of the continuing disparity between men's and women's gross earnings is attributable to the disproportionate increase in the number of women to men entering the workforce rather than to ineffectiveness of federal policy.

We conclude that Title VII has proved somewhat effective in narrowing the earnings gap between men and women. Despite the relative lack of improvement in women's gross earnings during the decade after Title VII became federal policy, regression estimates show that Title VII's enforcement between 1967 and 1974 narrowed the sex differential in earnings by about 7.1%.<sup>8</sup> If change were to continue at this rate, it would take many years before this policy would eliminate all effects of sex discrimination in the labor market. Nevertheless, it is *effective policy and should continue to be rigorously enforced unless we find a better approach.*

In this article we examine, from an economist's perspective, how discrimination by employers may cause occupational segregation, how Title VII can reduce occupational segregation by reversing discriminatory behavior, and empirical estimates on how Title VII has affected women's entry into nontraditional occupations.

### I. Occupational Segregation by Sex and Earnings

In this study, we refer to "male occupations," or, when referring to them with respect to women, "nontraditional occupations." This usage results from attaching a sex label to certain occupations whose sex composition differs from that of the labor force as a whole. For example, we recognize engineers, physicians, carpenters, electricians, truck drivers, and laborers as traditionally male occupations. We recognize teachers, registered nurses, secretaries, typists, telephone operators, and maids as traditionally female occupations.<sup>9</sup> We define as male an

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7. Note, *supra* note 5, at 658.

8. See Beller, *Title VII and the Male/Female Earnings Gap: An Economic Analysis*, 1 *Harv. Women's L. J.* 157, 169, 171 (1978).

9. Defining this term involves making an arbitrary choice, but a certain convention has

occupation that is 5% more male than the labor force as a whole in 1960; that is, one in which males held 72.2% or more of the jobs. According to this criterion, 65.7% of all detailed (3-digit) Census occupations were male in 1960. Then we examine changes in the entry of women into this set of occupations that were male as of 1960. Occupations close to the cut-off point for our definition could cease to be "male" as women enter them over time. But for purposes of this study, we continue to define an occupation's label by its 1960 sex composition.

Gross statistics indicate that occupational segregation lessened during the seventies. The proportion of working men and women employed in male occupations in 1967, 1971, 1974, and 1977 are shown in Table 1. These figures are computed from data taken from the Annual Demographic file of the Current Population Survey (CPS) collected by the United States Bureau of the Census and made available on Public Use Tapes since 1968. The data refers to an individual's occupation during the preceding year. Figures for 1967 and the 1970's are not directly comparable because of changes in the Census' occupation codes in 1970 and data collection methods in 1971. Nevertheless, they show that during the seventies the proportion of men employed in male occupations remained unchanged while the proportion of women employed in them gradually rose. These changes caused the gross sex differential in the probability of being employed in a male occupation to decline by .042 from .670 in 1971 to .628 in 1977, or by 6.3% of the original differential.

Economists have developed two competing theories to explain occupational segregation. One view, developed in the context of human capital theory,<sup>10</sup> argues that women choose traditionally female occupations because they plan to drop out of the labor force periodically to bear and raise children and find that certain jobs accommodate such absences better than others.<sup>11</sup> In addition, some women may not have the education or training required to enter some male occupations.<sup>12</sup>

arisen in the literature. Moreover, we tried other definitions in our empirical estimates and found that the choice has little effect upon our conclusions.

10. See Schultz, *supra* note 2; G. Becker, *Human Capital* (2d ed. 1975).

11. Polachek, *Occupational Segregation Among Women: Theory, Evidence, and a Prognosis*, in *Women in the Labor Market* 137 (C. Lloyd, E. Andrews, C. Gilroy eds. 1979).

12. It is possible that, in the past, women did not obtain the education or training required to enter nontraditional occupations because they faced discrimination in educational institutions or in other institutions that provide training. Title IX of the Education Amendments of 1972 prohibits sex discrimination in educational institutions. Consequently, at least since 1972, it has been illegal to preclude women's access to the education needed to enter nontraditional jobs. Because this would make their skills more suitable for male occupations, Title IX may enhance Title VII's effectiveness.

A second theory suggests that discrimination against women in the labor market causes occupational segregation. Even after we control for all measureable skill differences between men and women, a substantial portion of the original occupational differential remains unexplained. Many economists attribute this unexplained difference to sex discrimination.<sup>13</sup> A recent treatise on sex differentials observes that “[Economic d]iscrimination actually occurs when women are treated differently than men of equal productivity, either by being paid lower wages on the average or by not being hired for some jobs.”<sup>14</sup> One theory explains wage differentials as grounded in misinformation and employer uncertainty about the comparative productivity of men and women.<sup>15</sup>

A related theory postulates that discrimination acts as a barrier to women's entry into certain occupations, reducing the demand for women relative to men. A reduction in demand implies that for every ten women and ten men that an employer would hire otherwise, he will desire to hire fewer than ten women and more than ten men. How many fewer will depend upon the extent of his desire to discriminate, or “taste for discrimination,”<sup>16</sup> as well as on how much it costs him to do so. Not only will these occupations become male-dominated, but the earnings of women will be lower than those of men because employers will offer less to women. Direct wage discrimination of this type is prohibited by the Equal Pay Act<sup>17</sup> and by Title VII. Because this discrimination imposes an artificial barrier on the supply of labor to these occupations, average wages will rise and they will become artificially high-wage jobs. The restrictions upon entry into this male sector force some women, if they want to find employment, to crowd into occupations in which employers do not discriminate against them, or discriminate less.<sup>18</sup> Crowding in this other sector creates an excess supply of (female) labor which pushes wages below what they would be in the absence of discrimination.<sup>19</sup>

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13. For a formal definition and discussion of the implications of such discrimination, see G. Becker, *The Economics of Discrimination* (2d ed. 1971).

14. C. Lloyd & B. Niemi, *The Economics of Sex Differentials* 194 (1979).

15. “Statistical discrimination can occur either on the purely erroneous ground of consistent underestimation of female productive capacities or if the *average* productivities of men and women are actually unequal.” *Id.* at 200.

16. One economist argues that if an individual has a “taste for discrimination,” he must act as if he were willing to pay something, either directly or in the form of a reduced income, to be associated with some persons instead of others. G. Becker, *The Economics of Discrimination* 49-50 (2d ed. 1971). Employers, fellow employees, and consumers could hold these tastes and cause wage differentials to arise against women.

17. 29 U.S.C. § 206(d) (1976).

18. This theory of occupational crowding was first developed in Bergmann, *Occupational Segregation, Wages and Profits When Employers Discriminate by Race or Sex*, *E. Econ. J.*, Apr.-July 1974, at 103-10.

19. Because discrimination causes wages in the female sector to be lower than they

To the extent that these theories are correct, occupational segregation and the sex-based earnings gap will continue unless "tastes" for discrimination decline and discriminatory behavior by employers, employees and consumers lessens. Employers' perceptions about the productivity of women should change as they acquire better information about women's actual productivity or as women's productivity increases. But, unless we can expect these changes to occur naturally, incentives for change must be provided. Anti-discrimination laws promote change by making discrimination more expensive for employers.

Anti-discrimination laws also have a "ripple effect," precipitating collateral changes which reduce inequality without direct governmental intervention. Such laws rely for their success, not on catching all violators, but on promoting behavioral changes. Thus, along with eliminating particular discriminatory practices, enforcement of Title VII should dispel erroneous presumptions about women's qualities and capabilities as employees. One indication of a genuine reduction in sex discrimination would be an increase in the employment ratio of women to men in male occupations. In fact, the data represented in Table 1 do reflect a small increase in this ratio during the 1970's.

## II. Title VII of the 1964 Civil Rights Act

Title VII of the Civil Rights Act of 1964 may be expected to reduce discrimination against women in employment and diminish occupational segregation by sex. The employment provision of Title VII prohibits the use of sex as a hiring criterion by employers.<sup>20</sup> Statistically, this implies that a firm may not be in compliance with the provision if its female to male employment ratio is below the ratio of women to men in the available pool of qualified labor. Firms may come into compliance by attempting to hire a higher proportion of women at all wage levels than previously. To

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otherwise would be, many people argue Title VII should be extended to prohibit this type of pay discrimination. A well-documented case for this is made in Note, *supra* note 5, at 657-80. In a recent decision, the U.S. Supreme Court held, five to four, that "the Bennett Amendment does not restrict Title VII's prohibition of sex-based wage discrimination to claims for equal pay for 'equal' work." *County of Washington v. Gunther*, 452 U.S. 161 (1981).

20. Title VII § 703, 42 U.S.C. § 2000e-2. Section 703 of Title VII provides: (a) It shall be an unlawful employment practice for an employer—(1) to fail or refuse to hire or to discharge any individual, or otherwise to discriminate against any individual, with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, sex, or national origin; or (2) to limit, segregate, or classify his employees or applicants for employment in any way which would deprive or tend to deprive any individual of employment opportunities or otherwise adversely affect his status as an employee, because of such individual's race, color, religion, sex, or national origin.

the extent that firms respond in this manner, demand for women relative to men increases in the labor market. This tends to increase the relative employment and/or relative earnings of women. As long as some firms change behavior to come into compliance with the law, and others do not increase the extent of their violations, we should observe a decline in occupational segregation and in employment discrimination against women. These effects are simply the reverse of those caused by discrimination described above; as such, the law is well-designed to eliminate discrimination in employment.<sup>21</sup>

The process by which Title VII is expected to affect behavior involves a set of economic incentives. That is, the law imposes expected costs upon firms that engage in discriminatory employment practices. If the expected psychological and monetary costs of violation exceed the costs of compliance, then a firm will voluntarily comply with the law. Also, firms that engage inadvertently in subtle forms of discrimination might voluntarily comply once they learn that such practices are discriminatory and illegal. The Equal Employment Opportunity Commission (EEOC), created by Title VII, has the power to investigate charges of discrimination and to attempt to settle them. The Equal Employment Opportunity Act of 1972<sup>22</sup> amended Title VII to grant the EEOC the power to take a case to court if conciliation procedures fail. Prior to 1972, only complainants could bring Title VII actions, a step which could prove very costly for the individual. Now if conciliation fails, the employer is far more likely to end up in court.

Table 2 shows the number of employment cases filed annually rising to a peak in 1977.<sup>23</sup> Part of this dramatic increase in the number of Title VII cases reaching the federal district courts may be attributed to the EEOC's new powers. Another part may be attributed to the 1972 expansion of coverage to include state and local governments and educational institutions within Title VII's definition of "employer."<sup>24</sup> The costs of violation to employers depend upon both the probability that a case will be pursued through each procedural phase and the actual costs

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21. The law is less well-designed to eliminate wage discrimination. See Beller, *supra* note 8, at 157-73; Beller, *The Economics of Enforcement of an Antidiscrimination Law: Title VII of the Civil Rights Act of 1964*, 21 J. Law & Econ. 359 (1978). If it is enforced as a quota, the employment provision can have perverse effects in the long run under certain conditions. See Heckman & Wolpin, *Does the Contract Compliance Program Work? An analysis of Chicago Data*, 29 Indus. & Lab. Rel. Rev. 544 (1976).

22. Pub. L. 92-261, 86 Stat. 103 (codified as amended in scattered sections of 5 U.S.C. and 42 U.S.C.).

23. Because the magnitude of the increase in cases was declining prior to 1972, the possible explanation of an increase in awareness of the law could not alone explain the changes observed.

24. Title VII § 701, 42 U.S.C. § 2000e(b) (1976).

incurred at each step along the way. Because the 1972 amendments expanded Title VII's scope and increased the expected costs of violation, we expect the law's effect to be larger after 1972.

### III. The Effects of Title VII of the 1964 Civil Rights Act

Table 3 presents the percentage effect of Title VII on the sex differential in the probability of being employed in a male occupation estimated by multiple regression analysis for the following periods:

- (1) 1967-1971, representing the short-run effect of pre-amendment enforcement;
- (2) 1967-1974, representing the long-run effect of pre-amendment enforcement, plus the short-run effect of post-amendment enforcement;
- (3) 1971-1974, representing the short-run effect of post-amendment enforcement; and
- (4) 1971-1977, representing the long-run effect of post-amendment enforcement.<sup>25</sup>

The data reveal that Title VII of the 1964 Civil Rights Act increased a woman's chances, compared to a man's, of being employed in a male occupation, and that the 1972 amendments to Title VII augmented this change. Enforcement of sex discrimination charges under Title VII narrowed the sex differential in the probability of being employed in a male occupation by about 6.2% between 1967 and 1974, and by about 8.3% by 1977. However, according to these estimates, none of this effect occurred in the short run; there is no change in probabilities between 1967 and 1971. Thus, it appears that with respect to sex discrimination, Title VII was effective primarily after 1972.<sup>26</sup>

The results suggest that the 1972 amendments to Title VII significantly increased women's chances of entering nontraditional occupations. Post-amendment enforcement of Title VII reduced the sex

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25. This latter effect is only a partial one for this period since we have data on Title VII's enforcement through 1974 only. The methodology is discussed in the appendix.

26. There is probably some bias in the estimates, which compare 1967 data to data for 1971 or later, because the Census' occupation codes and some of their methods of collecting data changed between the sixties and the seventies. A Census monograph by Priebe (1972) was used to make the set of occupation codes comparable. J. Priebe, J. Heinkel & S. Greene, 1970 Occupation and Industry Classification Systems in Terms of Their 1960 Occupation and Industry Elements (U.S. Bureau of the Census, Technical Papers No. 26, 1972). His data on the 1960 sex composition of the new 1970 codes were used for this purpose. However, due to some changes in data collection methods in 1971 the data comparisons between 1967 and later years must be viewed with caution.

differential in the probability of being employed in a male occupation by about 2.1% in the short run (1971-1974), and this effect grew to 4.2%, or twice the short-term effect, over the long-run (1971-1977). The long-run effect (1967-1974) of pre-amendment enforcement (1967-1971) was about the same.<sup>27</sup> Estimates reveal that this increase was concentrated disproportionately among the youngest category of women studied.<sup>28</sup>

While our results indicate that enforcement of legislation prohibiting sex discrimination can be effective in desegregating the workforce, the change appears small when measured against the size of the gap which remains. The second column of Table 3 shows estimated reductions in occupational segregation as a percentage of the gross difference remaining at the end of each period. The data demonstrate that Title VII's enforcement over seven years diminished sex-based occupational segregation by 13.2%. While this change is not insignificant, at that rate it would take between 75 and 100 years for the gap to disappear and for the job distribution to achieve complete integration. Even this estimate may be unduly optimistic, because enforcement will tend to eliminate the least resistant forms of discrimination first. As time passes it will become increasingly difficult to eliminate all remaining vestiges of discrimination. But it may be unrealistic ever to expect a completely integrated occupational distribution; even absent discrimination, women might choose different occupations or have different qualifications than men.

There are several plausible explanations for Title VII's improved effectiveness after 1972. The impact of statutory amendments has already been cited. Another factor is Title IX of the Education Amendments.<sup>29</sup> Enacted in 1972, Title IX prohibits sex discrimination in education. Earlier prohibitions against sex discrimination were limited to employment. Pre-Title IX laws attacked sex discrimination only from the demand side—that is, from the side of the employer—while leaving the supply side unaffected. Clearly, Title VII's attack on employment discrimination alone would be ineffective if educational discrimination limiting the supply of women possessing needed skills went unchecked. Thus, Title IX probably enhanced the efficacy of Title VII's prohibitions against discrimination in hiring.<sup>30</sup>

Similarly, changes in attitudes toward equality for women advanced by the Equal Rights Amendment almost certainly contributed

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27. Table 3 illustrates the total effect of enforcement (1967-1974); data corresponding to the long-run effects of pre-amendment enforcement are incorporated therein.

28. Beller, *The Impact of Equal Opportunity Policy on Sex Differentials in Earnings and Occupations*, *Am. Econ. Rev.*, May, 1982, at 171.

29. 20 U.S.C. § 1681 (1976).

30. Beller, *supra* note 28.

to the post-1972 decline in sex-based occupational segregation; as did the United States Supreme Court's 1971 decision in *Griggs v. Duke Power*.<sup>31</sup> *Griggs* put teeth into Title VII, holding that tests or criteria for employment or promotion "must be shown to be related to successful performance of the jobs for which they [are] used."<sup>32</sup> After *Griggs*, employment practices which operate to exclude a class of job applicants and which cannot be shown to be related to job performance are prohibited.<sup>33</sup>

#### IV. Conclusion

Using a statistical analysis which holds non-legislative factors constant, we showed that enforcement of Title VII increased women's entry into nontraditional occupations during the seventies, thereby decreasing the extent of occupational segregation by sex. Most of the effect occurred after 1972, the year in which several laws designed to eliminate sex discrimination passed Congress and the year after the United States Supreme Court's landmark decision in *Griggs v. Duke Power*. Thus, we conclude that under policies currently in effect, Title VII helps women to enter nontraditional occupations. Compared to the size of the existing gap, the effect is small but not insignificant. By increasing the demand for women relative to men, Title VII may also reduce the earnings differential between the sexes.

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31. 401 U.S. 424 (1971).

32. Gillette, *Racial Discrimination in Unemployment*, 12 Wm. & Mary L. Rev. 918, 919 (1970-1971).

33. 401 U.S. at 431.

**TABLE 1**  
**Proportion of Working Men and Women Employed**  
**in Male Occupations for 1967, 1971, 1974, and 1977**

	1967	1971	1974	1977
Men	.604	.807	.805	.805
Women	.087	.137	.153	.177
Sex differential	.517	.670	.652	.628

*SOURCE:* U.S. Bureau of the Census, U.S. Census of Population: 1960. Final Report PC(2)-7A. Subject Reports. Occupational Characteristics. (Washington, D.C.: U.S. Government Printing Office, 1963), Table 1; Current Population Survey, Annual Demographic File, 1968, 1972, 1975, and 1978.

*NOTE:* In moving from 1967 to the 1970s, we move from the 1960 Census 3-digit occupation codes to the 1970 codes. J. Priebe, 1970 Occupation and Industry Classification Systems in Terms of Their 1960 Occupation and Industry Elements (U.S. Bureau of the Census Technical Paper No. 26, 1972), enables us to make this transition; however, the break in the figures in this table may reflect an imperfect reconciliation with the increased number of occupational categories. For all years, a male occupation is one in which men hold 72.2 percent or more of the jobs.

**TABLE 2**  
**Number of Employment Cases Filed in Federal**  
**District Courts Under Title VII,**  
**Fiscal Years 1970-1979**

	Number	Change over previous year
1970	344	—
1971	757	413
1972	1015	258
1973	1787	772
1974	2472	685
1975	3931	1459
1976	5321	1390
1977	5931	610
1978	5504	-427
1979	5477	-27

*SOURCE:* The Administrative Office of the U.S. Courts, Annual Report of the Director (1975 & 1979).

TABLE 3

The Net Percent Effect of Enforcement between 1967 and 1974  
of Title VII on the Sex Differential in the Probability  
of Being Employed in a Male Occupation,  
1967-1977

Period	Effect	As a percent of the remaining differential
1967-71	+ .003 <sup>a,c</sup>	0.4
1967-74 <sup>d</sup>	-.062 <sup>a,c</sup>	9.5
1971-74	-.021 <sup>a</sup>	3.2
1971-77	-.042 <sup>b</sup>	6.7
1967-77	-.083 <sup>b,c</sup>	13.2

<sup>a</sup>Taken from Beller, *Occupational Segregation by Sex: Determinants and Changes*, 17 *J. Hum. Resources* 371, 371-92 (1982).

<sup>b</sup>This effect, computed from the author's unpublished data, is only a partial effect for this period because the data on Title VII measure enforcement only through 1974.

<sup>c</sup>These estimates are subject to possible bias due to the change in the Census occupation codes in 1970.

<sup>d</sup>The effect for this entire period, 1967-74, is not the sum of the effects for the periods, 1967-71 and 1971-74, which show short-run effects for pre-amendment and post-amendment enforcement, respectively. It is the sum of the long-run effect of pre-amendment enforcement (not shown) and the short-run effect of post-amendment enforcement. Since the long-run effect is larger, this figure is larger than the sum of the other two.

**TABLE 4**  
**Mean and Standard Deviation of Title VII Variables**  
**from Female Sample, 1974**

	Mean	Standard Deviation
Investigations per 1000 employed women		
Pre-amendment	.112	.110
Post-amendment	.313	.266
Probability of successful settlement		
Pre-amendment	.501	.324
Post-amendment	.541	.209

*SOURCE:* Equal Employment Opportunity Commission computer files.

*NOTE:* The Title VII variables are computed for the 23 State groups identified in the Current Population Survey, separately for private wage and salary and government workers. They are assigned to each individual on the basis of State and class of worker.

### Appendix

This appendix is intended to provide interested readers with an appreciation of the basic statistical methodologies used in this study. The complete equations upon which the empirical results presented in this paper are based are available from the author upon request. Those interested in a more detailed explication are referred to the following related articles by the author:

*Occupational Segregation by Sex: Determinants & Changes*, 17 J. Hum. Resources 371 (1982)

*Title VII and the Male/Female Earnings Gap: An Economic Analysis*, 1 Harv. Women's L. J. 157 (1978)

*The Economics of Enforcement of an Antidiscrimination Law: Title VII of the Civil Rights Act of 1964*, 21 J. Law & Econ. 359 (1978)

*The Impact of Equal Opportunity Policy on Sex Differentials in Earnings and Occupations*, Am. Econ. Rev., May, 1982, at 171.

Once we understand how Title VII may be expected to affect occupational segregation and how these effects may be measured, we must construct a model to estimate those changes in occupational segregation attributable to Title VII. In selecting an appropriate technique for estimating the model, we must determine how to measure occupational segregation and we must identify and control for factors other than Title VII which may affect occupational segregation

In addition to sex discrimination variables, we look at the individual's decision to enter a male occupation as a function of skill, level of commitment to the labor force, geographic location, and several other control variables, including race. To a large extent, occupational differences among individuals result from differences in education and on-the-job training. The human capital model, which relates earnings to individual investments in skills through education and on-the-job training (see text at note 2), is adapted here to explain differences in entry into male occupations. Commonly, years of experience in the labor market is used to measure the effects of on-the-job training. But, when the data provide information on potential rather than actual labor market experience, we must supplement our experience measure with labor supply variables. Variables such as number of hours or weeks worked in the preceding year, marital status, and number of children serve as proxies for the individual's degree of commitment to the labor market and for the number of prior years not spent in the labor market. Similarly, we control for differences in attitudes toward women working in the market and occupational structure by controlling for region and urban-rural residence.

The probability of being employed in a male occupation is defined as equal to one if the person is so employed, and zero otherwise. We believe that this is the appropriate specification for this study. An alternative specification (the proportion of employment that is male in an occupation) was rejected for the following reasons: we do not expect Title VII to affect entry into the non-male occupations relative to one another, nor, among male occupations, to have a larger effect upon the most highly segregated ones. Rather, we interpret the law to group segregated-male occupations as a single unit and treat them differently from other occupations. This notion is best captured by a dichotomous dependent variable.

The proportion of the Current Population Survey (CPS) samples employed in male occupations for each sex is shown in Table 1 above. We estimate the equations for each year and each sex by using ordinary least squares regression analysis. We have chosen to use a linear probability model to estimate these equations; when the dependent variable is binary, as it is in our case, it is sometimes necessary to use a nonlinear estimation technique, such as the logit. This maximum likelihood estimation can be

very expensive on large data sets such as ours. When we used this technique on one of our data sets, we found that the results were not significantly different from those obtained using the less expensive linear probability model.

The difference between coefficients estimated in each of two years for the Title VII variables described below estimates the success of the law in reducing barriers to the entry of women into nontraditional occupations. Through the use of coefficient differences, our methodology takes account of both pre-existing relationships and systematic structural changes related to enforcement of Title VII. Variation across states in variables measuring Title VII's enforcement should be positively related to the probability of a working woman being employed in a male occupation. A positive coefficient in a post-enforcement cross-section is evidence of the success of Title VII as long as no relationship exists between these variables in a pre-enforcement cross-section. Should a prior relationship exist, estimates from a post-enforcement cross-section alone would not provide such evidence. In this case, we must subtract coefficients estimated in the pre-enforcement cross-section from the comparable post-enforcement coefficients. Thus, the effect of enforcement is actually measured by a difference over time in coefficients from two comparable cross-sections, rather than by a coefficient estimate from a single post-enforcement cross-section. Since the occupational structure may change over time for other reasons, and these structural changes may be systematically related to differences in Title VII's enforcement across states, we also estimate the coefficients of Title VII on male data. Changes across states in the occupational structure between male and other occupations should be picked up by these coefficients since the incumbents in these occupations are mostly male; we subtract them from the comparable coefficients for females. Hence, our methodology involves estimating and comparing pre- and post-enforcement cross-sections for both males and females. The full model consists of equations estimated on data from 1967 or 1971, prior to enforcement, and 1974 or 1977.

From our analysis of the process by which the law affects behavior we construct two measures of the law's enforcement, essentially empirical counterparts to the law. The expected costs of violating Title VII vary across states, and were altered by the law's 1972 amendments. Two variables are constructed for each of the two periods delineated by these amendments to estimate expected costs: the probability of Title VII violation charges, and the probability of paying a penalty if found in violation of Title VII. The probability of violation charges is estimated by the geographic incidence of EEOC investigations, the ratio of the number of investigations of sex discrimination charges completed by the EEOC—or by the state or local Fair Employment Commission to which a charge is

deferred—to the number of women working during 1970. This variable represents the visibility of enforcement activities; the more visible, the greater its deterrent effect should be.

The probability of paying a penalty is estimated by the ratio of successful (voluntary) settlements of sex discrimination charges (successful conciliations plus successful pre-decision settlements) to attempted (voluntary) settlements. Given the incidence of investigations, the greater the probability of successful settlement, the greater is the expected marginal penalty for discrimination and consequently, the greater the expected effect of enforcement of Title VII. Both of these enforcement variables are defined geographically for each of the twenty-three state groups identified in the CPS, the main source for the demographic data used in this study, and are defined separately for the private sector and the government.

Some points need to be made about these variables and the data used to construct them. First, the EEOC determines whether a settlement is "successful" or "unsuccessful." Second, not all investigations or settlements have the same potential impact. Around 30% of discrimination charges have been processed as "systemic," while the other 70% have been processed as "limited scope." Those on systemic discrimination, defined by the EEOC as "employment 'systems' which perpetuate discriminatory effects of past discrimination (even after the original discriminatory acts have ceased) as opposed to overt 'acts' of discrimination," should have a greater impact. Because we cannot identify these types separately, all charges must be treated alike for purposes of this study. Third, there is some possibility of variation in the choice by the EEOC of which complaints to settle. We ignore this possibility in defining the variables because all investigated complaints in which there is a finding of cause should be followed by an attempted settlement, and this should be determined by the order in which the complaints are received. The settlement variable is thus defined over cases where discrimination appears to exist. Cases where discrimination does not seem to exist drop out between the two measures. Finally, we would prefer to include among settlements those that are litigated; however, this is not possible in our data because the EEOC does not maintain a record of litigation activities in its compliance file. To some extent the effects will be picked up by the variable measuring the probability of successful settlement. Firms should be more likely to agree to settlements in areas where the probability of litigation and the costs of litigated settlements are higher.

Data on the 3-digit Census occupations of men and women and on their economic and demographic characteristics are taken from the U.S. Census Bureau's Annual Demographic File of the 1978, 1975, 1972 and 1968 CPS. All men and women who worked in the previous year, except the self-employed, are included in the samples.