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Abstract

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Keywords

analysis, research, salary, men, women, gender, earnings, policy, public, pay, equal

Comments

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STARTING SALARY DIFFERENCES BETWEEN WOMEN AND MEN: ORGANIZATION-LEVEL FINDINGS AND AN ANALYSIS OF CURRENT POLICY OPTIONS

This study examined the starting salaries paid by over 250 employers to 2,800 university graduates. Of the overall female-male salary difference of $4,396, the majority, or $3,175 (72%), occurred between employers; $1,221 (28%) occurred within employers. One policy implication is that within-organization policies such as pay equity could address up to $1,221 (28%) of the female-male pay difference. Although adjustment for qualifications such as degree level, grade point average, and college major reduced the pay difference between women and men, our findings indicate that, on average, the same employer pays graduating women 3.5% to 5.8% less than graduating men with similar qualifications.

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The female-male earnings ratio stands at 73% for managerial and professional specialty jobs (Bureau of National Affairs, 1992). In economic theory, the market forces of supply and demand determine salaries, and hence, should explain gender-related earnings differences. However, it has become increasingly apparent to economists, sociologists, and other students of pay determination that product market, labor market and other influences on pay should be studied and understood in the context of specific organizations (employers), for two reasons: 1) the pay-setting process occurs within organizations, and 2) similar organizations can differ significantly in their pay practices (Gerhart & Milkovich, 1990; Groshen, 1990). Additionally, organization-level information is essential to estimate the likely impact of pay policies designed to reduce within-employer pay differentials (Groshen, 1990; Johnson & Solon, 1986).

However, despite the fact that numerous studies have examined sources of earnings differences between women and men (for reviews, see Blau & Ferber, 1992; Cain, 1986; Treiman & Hartmann, 1981), few have used organization-level data. And although there has been research on discrimination in hiring decisions (e.g., Olian, Schwab, & Haberfeld, 1988) and using single employers (e.g., Gerhart, 1990), two basic questions remain unanswered. First, to what extent do women and men with the same qualifications hired by the same employers earn the same starting salaries? Second, if similarly qualified women and men hired by the same organization are paid differently, what is the magnitude of this within-organization differential relative to the gender differentials in pay that may exist between organizations?

We would like to identify pay differences that remain after adjusting for qualifications, and we control qualifications in a number of ways. The sample consists of graduates of a single university that has highly competitive admissions standards, which should reduce variance in academic ability. For example, the class of 1995 at this institution had a combined SAT score average of approximately 1300, and 84% of them were in the top 10% of their high school class. We also control for degree level and college grade point average. Finally, we adjust for differences in college major, which although it has been found to significantly influence earnings (Daymont & Andrisani, 1984; Gerhart, 1990), it is often not included in studies of pay determination.

Our measures of ability, which control for differences in qualifications between women and men, combined with organization-level data should allow for more accurate determination of the factors behind starting salary differences, and consequently, more accurate policy recommendations. We consider several policies, including pay equity (comparable worth), defined as equal pay for work of equal value; equal pay as defined under the Equal Pay Act of 1963; equal employment opportunity (EEO) policies, or nondiscrimination in employment decisions;

affirmative action policies, defined as employment goals that assist women and minorities underrepresented in certain jobs, occupations, and employers, with a focus on both job assignment and hiring practices; and equal education efforts, including equal access to and opportunity in education.

LITERATURE REVIEW

We build upon several recent studies of female-male pay differences. In the absence of employer-level data, Johnson and Solon (J&S) (1986) used industry-level data to conclude that a comparable worth policy would eliminate 8%-20% of women's pay disadvantage. Moreover, the authors suggest that they may have actually overstated the policy's efficacy because they used industry rather than employer-level data. Data at the industry level do not capture differences between employers within the same industry. And comparable worth policies, which focus on within-employer differences, would not address between-employer differences within an industry.

Groshen (1990) was able to use establishment-level data to estimate that 40%-74% of negative returns to percent female occur within establishments, and thus, a comparable worth policy would have a much greater impact on female-male pay differences than suggested by the J&S research. In our study, we build upon Groshen's (1990) application of policy to earnings differentials. However, Groshen's study did not control for human capital and examined only 5 industries, as opposed to J&S's economy-wide sample, and our 65 industries.

This study adds to the literature on female-male earnings differences in several ways. First, the study aims to reconcile the conflicting findings and interpretations of the J&S and Groshen studies, by measuring human capital type and quality, neither of which are controlled for in those studies. Second, using controls for both employer and industry we can evaluate J&S's suggestion that employer-level data more finely distinguish, and therefore, provide lower estimates of within-organization pay differences.

Policy options and their likelihood of implementation change over time. Pay equity seeks to eliminate pay differences between women and men that stem from women working in occupations that are paid less because they are dominated by women. Although our study's results should have implications for pay equity policies, its impact should be much broader because it will yield estimates of the relative size of between- and within-employer differences. Many policies focus on only one or the other component.

Because Gerhart (1990) and Olson et al. (1987) found that starting salary shortfalls for women explained a large portion of career female-male earnings differences, and because starting salaries do not contain the confounding influences of after-hire factors, this study focuses on starting salary differences between women and men. Moreover, a good deal of work suggests that because decisions about new hires take place in the context of relatively poor information and high ambiguity, the risk of discrimination may be higher than in many other employment decisions (Nieva & Gutek, 1980; Powell, 1993; Tosi & Einbender, 1985). We examine starting salaries of women and men using data on more than 65 industries, and over 250 private and public sector employers.

RESEARCH QUESTIONS

We pose three research questions in this study:

1) What factors influence the starting salaries of college graduates? What portion of earnings remains unexplained after controlling for supply- and demand-side factors?

2) How much of the female-male disparity in the starting salaries occurs within versus between organizations?

3) What are the implications of these results regarding the ability of public policies to remedy differences between female and male starting salaries?

METHOD

Sample

The sample consists of 2,800 graduates of a large university, and includes academic and employment data. The subjects, 1,289 (46%) of whom are women, graduated between 1985 and 1988, and gained employment at more than 250 organizations. The data are from an annual placement survey administered by the university, and supplemented by academic data from the university registrar's office. The average response rate for the survey was 80%. See Table 1 for additional descriptive information on the sample.

Insert Table 1 about here

The final sample consisted of full-time workers who were U.S. citizens employed by civilian employers. Excluded observations included those with no salary information, foreign individuals, volunteer workers, professional interns, part-time and self-employed workers, and those in the military. Also, those working for employers hiring 2 or less graduates were excluded.

Excluded observations were examined for evidence of selection bias. The largest excluded group, those with no salary data, consisted in part of graduate students (38%) and those still seeking employment (11%). The numbers of women and men excluded for lack of salary data were in line with their proportions in the original sample -- 45% for women and 55% for men. The other major exclusion from the original data were those who worked for employers hiring 2 or fewer graduates. We used this sample restriction because a major focus of our study is to estimate within- versus between-employer pay differences. Thus, at least two observations, and preferably more in order to enhance precision, are required for each employer. Visual inspection of employers hiring less than this number indicated that they were smaller employers. Since 55% of these exclusions were women, then women may be working for smaller employers, and exclusion of this group could underestimate between-organization differences in pay between women and men. Also, women may work for these smaller employers because they cannot obtain positions with larger, better-paying organizations. On the other hand, smaller employers may offer better career opportunities in today's climate of employer downsizing. It is difficult to determine the impact of the sample selection in this case.[1]

Overall, by studying the starting salaries of recent labor force entrants, the sample is less likely to suffer from the selection bias problems of career earnings studies. If women experience starting salary shortfalls and these explain a significant portion of career earnings differences, women may be less likely to remain with employers that pay them less or to remain in the labor force in general.

Measures

In this study we explore earnings differences between women and men through an examination of starting salaries. The use of starting salaries avoids the potentially confounding influences of after-hire factors on pay, such as performance appraisal ratings and employer-provided training. These after-hire measures significantly influence earnings, but may reflect employer discrimination (Gerhart, 1990). Also, the relationship between human capital and starting salaries may be more direct than with career earnings because graduates' recently acquired human capital will have undergone minimal depreciation.

Because the primary human capital sources of female-male pay differences include level and quality of education (Becker, 1971; Mincer, 1974), we distinguish masters and bachelors degree recipients by a dummy variable for degree level; human capital quality is measured by grade point average, and by examining graduates of a single university to minimize variation in educational quality.

College major serves both as a measure of human capital and a measure of labor market conditions, and has been found to be a significant predictor of salaries (Daymont & Andrisani, 1984; Gerhart, 1990). We chose major instead of occupation because major better reflects student choices than does occupation, which is a function of both student and employer choices. Major is measured with 76 dummy variables. We were unable to measure another source of gender-related pay differences, labor market experience (Mincer & Polachek, 1974; Olson, Frieze, & Good, 1987), but expect variation of this measure to be minimized by the fact that over 80% of the sample consists of undergraduates.[2]

Women work in separate industries/sectors (Blau, 1977; Goldin, 1990), establishments (Groshen, 1990), occupations (Blau, 1977; Groshen, 1990), job levels (Bielby & Baron, 1986), and job-cells (occupation within employer) (Blau, 1977; Bielby & Baron, 1986; Groshen, 1990), than do men. Significant segregation by or separation into these related structural components may translate into earnings differences between women and men (Buckley, 1971; Beller, 1982).

We use employer and industry dummy variables to capture market influences specific to particular employers and industries. Industry indicator variables are represented by 3-digit SIC codes, except where there were not at least two employers per industry, in which cases industries were aggregated to 2-digit SIC codes. Employer indicator variables were coded with unique Duns codes according to Dun & Bradstreet directories (1985-1988); hence, subsidiaries with unique Duns codes were treated as separate employers, but divisions within organizations were treated as one employer. Finally, we hold constant the year of graduation and ethnicity using dummy variables.

Analyses

The first two research questions required different approaches. To determine what factors influence the starting salaries of college graduates (Research Question 1), a series of regression equations were run separately by gender, in which dummy variables for department major, and industry or employer, were added to successive equations to examine how the results changed as progressively less exogenous variables were added (Blinder, 1973). The equations are presented below:

$$\ln(S_i) = \textit{HUMAN CAPITAL } B_1 + \textit{DATE } B_2 + \mu \tag{1}$$

$$\ln(S_i) = \textit{HUMAN CAPITAL } B_1 + \textit{DATE } B_2 \quad \textit{MAJOR } B_3 + \mu \tag{2}$$

$$\ln(S_i) = \textit{HUMAN CAPITAL } B_1 + \textit{DATE } B_2 \quad \textit{MAJOR } B_3 + \textit{INDUSTRY } B_4 + \mu \tag{3}$$

$$\ln(S_i) = HUMAN\ CAPITAL\ B_1 + DATE\ B_2$$
$$MAJOR\ B_3 + EMPLOYER\ B_5 + \mu \quad (4)$$

where S_i is the starting salary of the i-th worker, HUMAN CAPITAL is a vector of human capital characteristics, DATE represents a vector of graduation date dummy variables, MAJOR is a vector of college major dummy variables, EMPLOYER a vector of employer dummies, and INDUSTRY a vector of industry dummy variables.[3] The βs represent vectors of coefficients and μ is a disturbance term.

Then using the regression results, gender differences in pay were decomposed into two components (Blinder, 1973; Oaxaca, 1973): 1) differences in mean levels of endowments, and 2) differences in coefficients for these endowments; i.e. returns paid by employers. In a salary decomposition, female and male salaries are modeled using separate equations (all salary data are in natural log form):

$$\overline{S_f} = B_f \overline{X_f} \quad (5)$$

$$\overline{S_m} = B_m \overline{X_m} \quad (6)$$

And the average salary difference between women and men is as follows:

$$\overline{S_m} - \overline{S_f} = B_m (\overline{X_m} - \overline{X_f}) + \overline{X_f} (B_m - B_f) \quad (7)$$

This overall salary difference was decomposed into the portions due to mean differences in endowments and differences in coefficients (returns) by dividing each side of the previous equation by the salary difference between women and men:

$$1 = B_m\,(\overline{X_m} - \overline{X_f})\ /\ \overline{S_m} - \overline{S_f}\quad (MEAN)$$
$$+\ \overline{X_f}\,(B_m - B_f)\ /\ \overline{S_m} - \overline{S_f}\quad (COEFFICIENT)\quad ,\ where \qquad (8)$$

S=starting salary
f=female
m=male
B=coefficient
X=endowments, productivity traits

To determine the portions of the female-male pay difference occurring between and within organizations (Research Question Two), regressions were performed with data on women and men in a single equation that included a gender variable. Employer, industry, or employer/industry dummy variables were added subsequently and changes were calculated in the gender coefficient:

$$\ln(S_i) = X\,B_1 + GENDER\,B_{21} + \mu \qquad (9)$$

$$\ln(S_i) = X\,B_1 + GENDER\,B_{22} + EMPLOYER\,B_3 + \mu \qquad (10)$$

$$\ln(S_i) = X\,B_1 + GENDER\,B_{23} + INDUSTRY\,B_3 + \mu \qquad (11)$$

$$\ln(S_i) = X B_1 + GENDER\ B_{24} + EMPLOYER\ B_3 + INDUSTRY\ B_4 + \mu \quad (12)$$

where X included some or all of the following variables: GPA, DEGREE LEVEL, ETHNICITY, GRADUATION DATE, or COLLEGE MAJOR. A negative coefficient on gender, β_{21} (women=1, men=0), in (9), would indicate that women were paid less than men. The addition of the employer variable (10) creates a new gender coefficient β_{22}, which represents the portion of the earnings difference occurring within employers. The difference between β_{21} and β_{22} yields the portion of the earnings difference occurring between employers. The X vector of control variables was specified three different ways in Models A, B, and C :

A) ETHNICITY, GRADUATION DATE

B) ETHNICITY, GRADUATION DATE, DEGREE LEVEL, GPA

C) ETHNICITY, GRADUATION DATE, DEGREE LEVEL, GPA, MAJOR

RESULTS

Research Question One

What factors influence the starting salaries of college graduates, and what portion of earnings remains unexplained after controlling for supply- and demand-side factors? Regression results are presented in Table 2. Note that the presence or absence of department major, industry, and employer dummy variables in the models is indicated by a "YES" or "NO", respectively. Because all measures are dummy variables, results are interpreted in terms of the missing category. For example, graduation date coefficients are estimated in relation to the reference year, 1988. Wage decompositions, earnings ratios, and discrimination estimates are presented in Table 3.

Insert Tables 2 and 3 about here

The addition of college major in Model 2 (Table 2) improved the explanatory power of the model over that of Model 1, with the adjusted R-squared values increasing from .078 to .511 for women and from .180 to .557 for men. Also, the fit of the models increased with the additions of the industry (Model 3) and employer (Model 4) variables, although the employer dummy variable clearly explained more of the variance in starting salaries.

As expected, in all models bachelors degree recipients received lower returns than did those holding masters degrees, ranging from 17% less for males in Models 2 and 4 to 28% less for males in Model 1 (Table 2). Men with high grade point averages received significantly more than males with low grade point averages in Models 1 through 3, as did females with high grade point averages in Model 3.

The mean and coefficient columns of Table 3 for each model sum to a total of one, which represents the pay difference between women and men. Positive figures in either column represent positive contributions to the earnings difference. Conversely, negative figures represent factors that narrow the earnings difference. Specifically, a positive figure in the "mean" column signifies that women possess more low-paying characteristics and/or that men possess more high-paying characteristics. A positive figure in the "coefficient" column reflects lower returns that women receive for endowments, whether they possess more or less of the endowments compared to men. For measures such as major, which are operationalized through a number of dummy variables, the figures in the table represent sums of the mean and coefficient calculations for all dummy variables for that measure. The calculations of means and coefficients have policy implications in that differences in endowments may support policies such as equal education efforts, while differences in coefficients may call for equal opportunity, affirmative action, or employer pay policies such as pay equity.

As presented in Table 3, Model 2, college major contributed significantly to the earnings difference because women and men major in differentially paying majors (mean). However, given the same major, women received higher returns than their male counterparts (coefficient). Women also obtained higher returns for the same major within industry (Model 3) and within employer (Model 4).

The decomposition results also highlight the fact that industry and employer lead to differential findings. The positive mean and coefficient for industry (Table 3, Model 3) indicated that women worked in lower-paying industries than did men (mean) but that within the same industry women received a substantial salary penalty (industry coefficient). This is in contrast to Model 4 (Table 3) where within the same employers, women appeared to be at a slight advantage in terms of pay (employer coefficient). In addition, the positive mean value for employer in Model 4 indicated that on average, women worked for lower-paying employers than did men. Overall, women received less pay both within industries (Model 3 total coefficient) and employers (Model 4 total coefficient).

It should be noted that the overall coefficients for both Models 3 and 4 remained positive, demonstrating that women still receive negative returns within industries or employers as compared to men.

As displayed in Table 3, Models 2 through 4, the degree level distribution for women as compared to men resulted in lower female salaries because fewer women possess masters degrees (mean) and because those that did, received lower returns than their male counterparts (coefficient). This occurred both within and between employers.

Discrimination estimates were calculated in ratio form for Models 1 to 4 and are presented in the lower portions of Table 3. The raw difference of $4,396 (presented in Table 1) between female and male college graduates resulted in an unadjusted female-male earnings ratio of .833. Adjusted ratios, which represent the ratio of women's salaries to men's salaries holding endowments (mean) constant, are calculated in two forms, "Ar" and "Ar'", the formulas for which are presented beneath Table 3. The "1-Ratio" column indicates the portion of the earnings difference that is due to differential returns for the same endowments, and thus, is considered to be an estimate of discrimination.

In particular, according to the adjusted ratio (Ar), women received 15 and 5 cents less per dollar than men after controlling for human capital factors and major in Models 1 and 2, respectively. The addition of the industry variables in Model 3, Table 3, increased the adjusted ratio (Ar) to .968, with a corresponding unexplained portion of .032. Similarly, controlling for employer brought the adjusted ratio (Ar) to .965. To the extent that the employer or industry in which graduates seek employment exhibit characteristics such as barriers to entry that are endogenous to labor market discrimination, Models 3 and 4 will underestimate discrimination.[4]

Research Question Two

How much of the female-male disparity in the starting salaries occurs within versus between organizations? Table 4 presents estimates of between- and within- organization differences, based on single equation ordinary least squares (OLS) regressions that pool data on women and men.

Four sets of regressions were run for each of three general Models A, B, and C, in which subsequent variables were added to each model. From the resulting twelve regressions, changes in the gender dummy coefficients could be calculated for purposes of estimating between- and within-employer pay differences. For example, in Table 4, Model B, starting salary was regressed on the gender dummy variable, degree level, GPA, and controls for year of graduation and ethnicity. The resulting coefficient on gender was -.15, or -15%, which says that women received 15% ($3,663) less in pay than men. To determine how much of this 15% occurred within versus between employers, a second regression added the employer dummy variables, and a new gender coefficient of -.04, or -4% ($977) was estimated. This represents the difference occurring within organizations. The difference between the -15% and the -4%, or -11% ($2,686), represents the between-employer portion of the pay difference. Between- and within- industry differences are revealed by the addition of the industry dummy variables to Models A, B, and C.

The figures in Table 4 are also expressed as a percentage of the total difference for a particular model. Thus, for Model B, of the unaccounted difference of 15%, 73% (.11/.15) occurred between employers; 27% (.04/.15) occurred within employers.

Insert Table 4 about here

A key finding is that in all models, the employer dummy variables attributed less of the female-male differences to within-organization sources than did industry variables. For example, in Model C the employer dummy variables attributed 50% of the remaining gap to within-employer differences, while the industry dummy variables attributed 67% to such sources. Given that the employer variables explained more of the variance in starting salaries in Models A, B, and C, and that the use of industry variables with employer (employer/industry) added little to the adjusted R-squared values, it is clear as well that employer data more accurately distinguished within- and between-employer pay differences than did industry data. This is very significant for policy discussions regarding gender-related pay differences because differential results from using employer instead of industry measures could lead to dissimilar policy conclusions.

Another key finding is that women and men work for different employers, largely on the basis of college major. Before major is controlled for in Model B, 73% of the initial salary difference was due to segregation by organization, or between-employer differences. However, when department major was added in Model C, between-employer sources accounted for only 50% of the remaining pay difference. In other words, a large portion of the between-organization difference originated from women and men possessing different majors. Once major is controlled for in Model C, the within- and between- organization sources became more equivalent.

Although between-employer pay differences are larger than those within organizations, the long-run effects of salary gaps within organizations were substantial. For instance, in Model C the within-employer starting salary disadvantage of $732 translated into a present value $27,864 shortfall for women over a 30-year career and $7,600 for a 10-year career, assuming a 7%

annual salary growth rate and 5% discount rate (e.g., Gerhart & Rynes, 1991).[5]

Research Question Three

What are the implications of these results regarding the ability of public policies to remedy differences between female and male starting salaries?

The results presented in Table 4 suggest that a policy which focuses on each organization separately (e.g., pay equity) could impact between $732 (16%) and $1,221 (28%) of the total $4,396 female-male salary gap. The $732 represents the within-organization pay differences remaining after human capital, major, and control variables were measured; the $1,221 represents the entire within-employer pay difference between women and men.

More specifically, with the human capital variables of degree level and GPA added to the model, the female-male earnings difference fell to 15%, of which 27%, or $977, occurred within employers. Adding college major decreased the gender difference to 6%, of which half, or $732, occurred within employers. However, since pay equity policies often seek to reduce the portion of the gap stemming from women and men being concentrated in different fields, perhaps the potential of pay equity is underestimated by controlling for major.

It is possible that equal pay policies could address this $732 - $1,221 gap as well; however, as successive control variables, such as degree level and college major, were added to the model, it is less likely that new hires would be performing substantially the same work. Additionally, there is evidence that the portion of the pay gap that could be remedied by equal pay policies is relatively small (Buckley, 1971; Groshen, 1990), but not in all cases (Gerhart, 1990).

Although we found substantial within-employer differences, our results suggested that the largest portion (72%) of pay differences between women and men occurred because they work for different employers. Therefore, policies such as pay equity that focus only on within-employer differences would not address this portion of the earnings gap. Equal employment opportunity efforts and affirmative action have the potential to affect the entire earnings difference, by addressing both job assignment and hiring practices. Equal education efforts could address the portion of the earnings difference due to different majors or levels of education.

DISCUSSION

This study augments the literature on female-male pay differences in two key ways. First, the study finds that even with equivalent college majors, degree level, quality of education, and perhaps most interesting, the same employer, women and men do not earn equivalent starting salaries. Second, in addition to providing new evidence regarding the size of between- versus within-employer pay differences, the study provides unique evidence that employer data more accurately distinguish within-employer pay differences than do industry data. Further, the employer-based estimates suggest a smaller role for within-employer policies (e.g., pay equity) than do industry-based estimates, confirming the speculation of J&S.

The first research question of the study required examination of unexplained earnings differences, or discrimination estimates, which were calculated using unadjusted and adjusted ratios of female to male salaries. Our unadjusted ratio of .833 is significantly higher than the .66 estimated by the Bureau of the Census for white collar professionals in 1988, the most recent year in this data set. In addition, both the adjusted and unadjusted ratios are among the highest in the literature (Cain, 1986), suggesting little labor market discrimination. On the other hand, as stated earlier, given the extensive control variables, the more remarkable result may be that the ratios do not reach unity. Also, because workers graduated from a prestigious, or "brand name", university, employers received "guarantees" regarding the expected quality of graduates, which should lead to less variation in salaries (Akerlof, 1970).

Supply-side variables accounted for over half of the differential in starting salaries in this study, which is considered to be an upper bound for such measures (Cain, 1986; Treiman & Hartmann, 1981), although analyses which include the important variable of college major will account for more of the differential (Goldin, 1990). Indeed our second set of analyses showed that the inclusion of human capital (qualifications) variables in the analyses, especially college major, accounted for much of the earnings gap in this sample, and resulted in much better fitting models (Tables 2 and 4). This suggests that studies such as J&S's (1986) and Groshen's (1990) may have found different results if more precise human capital measures had been included.

Despite the completeness of the model in the first set of analyses, caution should be used in interpreting unexplained female-male earnings, and/or attributing differences to discrimination. Generally, the more completely specified the model, the lower the estimate of discrimination (Cain, 1986). But there is a tradeoff to consider between the completeness of the model and using variables endogenous to discrimination. For example, the addition of the variable department major to models in this study improves their explanatory power, but to the extent that department major is influenced by the feedback effects of discriminatory employers, then inclusion of this variable will also control for, and hence, underestimate discrimination. To the extent that department major captures legitimate labor market factors, exclusion of this variable will lead to an overestimate of discrimination. And if there are omitted variables in the form of unmeasured productivity characteristics, discrimination may be under- or over-estimated depending upon which gender possesses more of the omitted characteristics (Cain, 1986). Also, caution should be used in the interpretation of the intercepts in decompositions (Jones, 1983).

The findings from the second analyses (Research Question Two) provide new information to help reconcile inconsistencies on the size of within- versus between- employer pay differences and reinforce the importance of organization-level data in studying pay determination (Blau, 1977; Gerhart & Milkovich, 1990; Johnson & Solon, 1986). The results indicate that the overall between-employer differences typically exceed within-employer differences. This finding contradicts Groshen (1990) who found larger within-employer pay differences, and is consistent with literature that finds larger between-employer differences (Blau, 1977; Buckley 1971) and larger betweeen-industry differences (Johnson & Solon, 1986). As one would expect, the results also indicate that employer data more accurately distinguish between inter- and intra-employer pay differences than do industry data, which underscores the importance of using organization-level data in studying gender-related earnings and in drawing implications from such studies.

The findings have important implications for employers. Within-employer pay differences between women and men may stem from employers providing less favorable ratings for female qualifications as compared to male qualifications, particularly when much inference about abilities is required (Nieva & Gutek, 1980). As such, employers may want to obtain more information on applicants in order to lessen the amount of inference required, and to standardize and monitor their recruiting and hiring practices (Powell, 1993) to prevent disparate starting salary outcomes for women. Between-employer pay differences could be ameliorated by improving employer effectiveness at attracting applicants, regardless of gender (Powell, 1993), and by efforts to counter preferences for men in hiring decisions (Olian, et al., 1990), especially in traditionally male-dominated employers and industries.

The findings may have important implications for public policy and in particular, pay equity. Pay equity, or equal pay for work of equal value, represents another option for employers and policymakers concerned about the within-organization pay difference between women and men. There is evidence that some major companies may be implementing various forms of pay equity on their own and that the Clinton Administration may re-open it as a public policy issue (Bureau of National Affairs, 1993). In addition, the policy is widespread among public sector employers, particularly at the state level, and it is mandated for public and private employers in Ontario, Canada.

Our results indicate that pay equity could remedy between $732 (16%) and $1,221 (28%) of the $4,396 overall starting pay difference. This finding is consistent with other research on comparable worth. In a review of nine studies on female-male earnings differences, Ehrenberg (1989) concluded that comparable worth policies would address from 10% to 20% of the wage gap for public sector employees, with small employment decreases. Blau and Kahn (1993), in an international study of the gender earnings gap, also concluded that a comparable worth policy would lead to a significant reduction in the pay gap in the United States.

However, pay equity may have detrimental or unintended consequences. Using longitudinal data, Gerhart and El Cheikh (1991) found that women with intermittent work patterns would benefit the most from a comparable worth policy, while Smith (1988) found that highly paid women and/or those working for larger employers would fare better. Also, there may be second-round effects (Blau & Kahn, 1993; Ehrenberg 1989; J&S, 1986) such as unemployment.

The fact that starting salary differences between women and men are due to a variety of factors and occur within and between employers suggests the need for an integrated approach of targeted policies to address these differences. The substantial differences in college major could be remedied by proactive equal education efforts, and the elimination of feedback effects of existing employer discrimination. Stronger equal opportunity and affirmative action efforts may address the difference of $732 to $1,221 occurring within employers, or the $733 to $3,175 between-employer difference, but existing policies did not prevent the significant pay difference in our sample. Thus, equal opportunity and affirmative action efforts may not be functioning as intended.

The analysis of public policies would not be complete without consideration of contextual factors which impact their effectiveness, such as the methods of implementation and budgetary constraints. Also, the intended effects of policies may be stymied by competing constituencies (Acker, 1989).

CONCLUSION

This study examined the starting salaries of college graduates, and specifically, female-male pay differences. The use of human capital controls not found in other studies indicated that most of the pay differences between women and men were due to differences in mean levels of endowments, particularly college major, rather than coefficients, or pay for the endowments. Still, despite these controls, women earned less than men even when working for the same employer, although overall, the largest portion of the female-male pay difference occurred between organizations.

ENDNOTES

1. We considered performing a formal correction for selection bias (Heckman, 1990), but some evidence suggests that the estimates obtained with such "corrections" may be no better and sometimes worse than the "uncorrected" estimates (Stolzenberg & Relles, 1990).

2. Olson, Frieze, & Good (1987) found that their 4 experience measures were significant in explaining the variation in the salaries of MBA graduates. In this sample, only observations from 1985 had age data with which an experience proxy could be calculated with the formula: age - years of schooling - 6. More than 70% of the 1985 graduates had no experience using this measure, and both women and men had an average experience level of less than one year, ranging up to 19 years of experience for women and up to 17 years of experience for men. Gerhart & Rynes (1991) in their sample of MBAs from the same academic institution as this study found that women had slightly higher average experience levels than men. As such, there may be little gender difference in experience in the sample, and thus, the lack of an experience measure may matter little in these analyses.

3. We do not control for ethnicity in these equations because ethnicity would contribute to the "endowment" portion of the decomposition, and only variables which are considered to be legitimate bases upon which employers can offer remuneration should be included as endowments. For comparison purposes, we

ran these equations and performed salary decompositions controlling for the ethnicity of the graduates. We found that the contribution of ethnicity to starting salary differences was small, and its inclusion did not appreciably change the overall decomposition results.

4. It could be argued that if women and men face different labor markets, their data should be analyzed separately. Chow test results indicated that data on women and men could be pooled for Models 1 and 2, but for Models 3 and 4 the tests indicated that the intercepts and coefficients may be sufficiently different to warrant separate equations. Hence, we have analyzed the data in separate (Research Question One) and pooled (Research Question Two) models.

5. It should be noted that results from Research Questions One and Two are related, and indeed, similar models yield similar results. For instance, Model 2 from the first analysis and Model C of the second analysis are identical except for gender and ethnic dummy variables in the latter. Thus, the discrimination estimate of .05 from the salary decomposition of Model 2, Table 3, is close to the unexplained gender dummy variable of .06 of Model C, Table 4. This .06 represents 33% of the earnings difference between women and men, which corresponds to the total "coefficient" of 31% for Model 2, Table 3.

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TABLE 1
Descriptive Information on Sample

VARIABLE	FEMALE (N=1,289)	MALE (N=1,511)	TOTAL/ OVERALL
AVG. STARTING SALARY:			
LOG	9.994	10.177	10.09
(std. deviation)	(.318)	(.295)	(.319)
$ (converted log)	$21,885	$26,281	$24,101
PAY DIFFERENCE	-$4,396	$0	-$4,396
AVERAGE GPA 0 - 4.3	3.00	2.96	2.98
(std. deviation)	(.381)	(.405)	(.395)
DEGREE LEVEL (% of gender)			
BACHELORS	1,127 (87%)	1,149 (76%)	2,276
MASTERS	162 (13%)	362 (24%)	524
ETHNIC (% of gender)			
ASIAN	118 (9%)	134 (9%)	252
BLACK	49 (4%)	54 (4%)	103
HISPANIC	36 (3%)	56 (4%)	92
WHITE	1,053 (82%)	1,222 (80%)	2275
OTHER/MISSING	33 (2%)	45 (3%)	78
MAJORS OF HIGHEST FREQUENCIES (% of major)			
A) ELECTRICAL ENGINEERING	85 (21%)	327 (79%)	412
B) HOTEL ADMIN.	182 (56%)	144 (44%)	326
C) APPLIED ECONOMICS & BUSINESS MGMT	133 (49%)	136 (51%)	269
E) INDUSTRIAL & LABOR RELATIONS	100 (52%)	93 (48%)	193
MOST FREQUENT INDUSTRIES (% of industry)			
A) HOTELS & MOTELS	135 (60%)	89 (40%)	224
B) BANKING	126 (58%)	91 (42%)	217
C) COLLEGES & UNIVERSITIES	131 (61%)	85 (39%)	216
E) ELECTRONIC COMPUTING EQUIP.	52 (27%)	141 (73%)	193

TABLE 2
Regression Results From Starting Salary Equations[a]

	MODEL 1	MODEL 1	MODEL 2	MODEL 2
VARIABLE	WOMEN	MEN	WOMEN	MEN
INTERCEPT	10.27*** (.039)	10.42*** (.028)	10.07*** (.072)	10.15*** (.197)
DEGREE LEVEL: BACHELORS	-.215*** (.026)	-.281*** (.017)	-.183*** (.021)	-.171*** (.015)
GPA: HIGH	.036 (.033)	.103*** (.025)	.048^ (.025)	.049* (.019)
MEDIUM	-.006 (.026)	.018 (.020)	.008 (.020)	.012 (.015)
GRADUATION DATE: 85	-.160*** (.024)	-.114*** (.020)	-.133*** (.018)	-.121*** (.015)
86	-.119*** (.024)	-.090*** (.019)	-.093*** (.018)	-.077*** (.015)
87	-.077** (.024)	-.040* (.020)	-.069*** (.018)	-.040** (.015)
DEPARTMENT MAJOR	NO	NO	YES	YES
INDUSTRY	NO	NO	NO	NO
EMPLOYER	NO	NO	NO	NO
ADJ. R-SQUARED	.078	.180	.511	.557
SAMPLE SIZE	1,289	1,511	1,289	1,511

^ $p < .10$
* $p < .05$
** $p < .01$
*** $p < .001$

[a] Figures in table corresponding to the intercept, degree level, grade point average, and date of graduation represent coefficients and (standard errors) from OLS regressions.

TABLE 2 (Continued)
Regression Results From Starting Salary Equations[a]

	MODEL 3	MODEL 3	MODEL 4	MODEL 4
VARIABLE	WOMEN	MEN	WOMEN	MEN
INTERCEPT	10.44*** (.143)	10.38*** (.213)	10.30*** (.102)	10.44*** (.171)
DEGREE LEVEL: BACHELORS	-.192*** (.017)	-.180*** (.013)	-.201*** (.017)	-.168*** (.012)
GPA: HIGH	.043* (.020)	.035* (.017)	.032 (.019)	.009 (.016)
MEDIUM	.020 (.015)	.009 (.013)	.008 (.015)	-.008 (.013)
GRADUATION DATE: 85	-.146*** (.014)	-.107*** (.013)	-.164*** (.015)	-.112*** (.012)
86	-.102*** (.014)	-.075*** (.013)	-.096*** (.014)	-.080*** (.012)
87	-.068*** (.014)	-.036** (.013)	-.072*** (.014)	-.048*** (.012)
DEPARTMENT MAJOR	YES	YES	YES	YES
INDUSTRY	YES	YES	NO	NO
EMPLOYER	NO	NO	YES	YES
ADJ. R-SQUARED	.716	.686	.786	.768
SAMPLE SIZE	1,289	1,511	1,289	1,511

* $p < .05$
** $p < .01$
*** $p < .001$

[a] Figures in table corresponding to the intercept, degree level, grade point average, and date of graduation represent coefficients and (standard errors) from OLS regressions.

TABLE 3
Salary Decomposition Results

		MODEL 1			MODEL 2	
	AMOUNT ATTRIBUTABLE TO . . .					
VARIABLES	MEAN (X)	COEFFICIENT (B)	TOTAL	MEAN (X)	COEFFICIENT (B)	TOTAL
INTERCEPT	.000	.839	.839	.000	.461	.461
LEVEL	.175	-.314	-.139	.107	.055	.162
GPA	.172	.829	1.001	-.001	.018	.017
GRADDATE	-.003	.154	.151	-.003	.077	.074
MAJOR	--	--	--	.588	-.304	.284
TOTAL	.172	.829	1.00	.690	.307	1.00

CALCULATION OF EARNINGS RATIOS & DISCRIMINATION ESTIMATES:	MODEL 1 EARNINGS RATIO	MODEL 1 DISCRIMINATION ESTIMATE	MODEL 2 EARNINGS RATIO	MODEL 2 DISCRIMINATION ESTIMATE
UNADJUSTED (Ur)[a]	.833	.167	.833	.167
ADJUSTED (Ar)[b]	.853	.147	.954	.046
ADJUSTED' (Ar')[c]	.859	.141	.945	.055

[a]UNADJUSTED RATIO = AVG. FEMALE SALARY/AVG. MALE SALARY

[b]ADJUSTED RATIO = SUM(FEMALE B*MALE X)/AVG. MALE SALARY

[c]ADJUSTED' RATIO = AVG. FEMALE SALARY/SUM(MALE B*FEMALE X)

TABLE 3 (Continued)
Salary Decomposition Results

		MODEL 3			MODEL 4	
	AMOUNT ATTRIBUTABLE TO . . .					
VARIABLES	MEAN (X)	COEFFICIENT (B)	TOTAL	MEAN (X)	COEFFICIENT (B)	TOTAL
INTERCEPT	.000	-.340	-.340	.000	.762	.762
LEVEL	.112	.053	.165	.104	.160	.264
GPA	-.001	-.050	-.051	.002	-.080	-.078
GRADDATE	-.003	.132	.129	-.003	.122	.119
MAJOR	.232	-1.055	-.823	.207	-.554	-.347
INDUSTRY	.385	1.539	1.924	--	--	--
EMPLOYER	--	--	--	.351	-.083	.268
TOTAL	.727	.279	1.00	.662	.327	1.00

CALCULATION OF EARNINGS RATIOS & ESTIMATES OF UNEXPLAINED DIFFERENCES:	MODEL 3 EARNINGS RATIO	MODEL 3 PORTION NOT EXPLAINED	MODEL 4 EARNINGS RATIO	MODEL 4 PORTION NOT EXPLAINED
UNADJUSTED (Ur)[a]	.833	.167	.833	.167
ADJUSTED (Ar)[b]	.968	.032	.965	.035
ADJUSTED' (Ar')[c]	.951	.049	.942	.058

[a]UNADJUSTED RATIO = AVG. FEMALE SALARY/AVG. MALE SALARY

[b]ADJUSTED RATIO = SUM(FEMALE B*MALE X)/AVG. MALE SALARY

[c]ADJUSTED' RATIO = AVG. FEMALE SALARY/SUM(MALE B*FEMALE X)

TABLE 4
Between- Versus Within- Employer/Industry Salary Differences

MODEL[a]	ADJ. R-2	TOTAL SALARY DIFFERENCE % ($) % OF TOTAL	BETWEEN EMPLOYERS % ($) % OF TOTAL	WITHIN EMPLOYERS % ($) % OF TOTAL
A) LN(SAL.)=SEX + ETHNIC + DATE OF GRADUATION	.112	-18% ($4,396) 100%		
+ EMPLOYER	.717		-13% ($3,175) 72%	-5% ($1,221) 28%
+ INDUSTRY	.637		-12% ($2,931) 67%	-6% ($1,465) 33%
+ EMPLOYER/ INDUSTRY	.722		-13% ($3,175) 72%	-5% ($1,221) 28%
B) MODEL A + DEGREE LEVEL + GPA	.205	-15% ($3,663) 100%		
+ EMPLOYER	.759		-11% ($2,686) 73%	-4% ($977) 27%
+ INDUSTRY	.682		-10% ($2,442) 67%	-5% ($1,221) 33%
+ EMPLOYER/ INDUSTRY	.763		-11% ($2,686) 73%	-4% ($977) 27%
C) MODEL B + MAJOR	.569	-6% ($1,465) 100%		
+ EMPLOYER	.785		-3% ($733) 50%	-3% ($732) 50%
+ INDUSTRY	.722		-2% ($488) 33%	-4% ($977) 67%
+ EMPLOYER/ INDUSTRY	.788		-3% ($733) 50%	-3% ($733) 50%

[a] Regressions within Models A, B, and C correspond to equations (9) - (12) in text.