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Does it Pay to be a Man?

A Study of Pay Differentials Between College Graduates

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Research Honors Project

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"Make [your employers] understand that you are in their service as workers, not as women" (Susan Brownell Anthony, 1868).

I.Introduction

College seniors face a number of challenges. These challenges may include finishing senior project, making sure all graduation requirements are met, and deciding what to do after graduation. Following tradition, I began my senior year by visiting the Career Center and discussing my options for after graduation with Ann Harding, the Assistant Director of the Career Center. During this conversation, I learned that men's starting salaries are greater than women's. This surprised me. The theory of labor economics suggests that people with similar education and experience should be paid similar amounts. Since male and female college graduates in the same field receive the same education and have had few career experiences, it seems that there should not be significant differences in their salaries.

However, a survey of data shows that there is indeed a difference. For example, men graduating in 1997 and entering a business-related occupation earned on average $30,778. Women graduating the same year earned on average $29,606. This is not a large difference, which can be explained by the fact that neither gender dominates the field. However, in the education field, a female-dominated occupation, male graduates earned on average $26,188, while female graduates earned $22,817. This difference is much more pronounced, yet some argue that women are earning less because it is a

female-dominated occupation. However, in computer science, a male-dominated field, male graduates earned on average $37,167 and female graduates earned only $35,383. (NACE 1997) These numbers show that there is a difference in men and women's salaries even within narrowly defined fields. This paper reviews the theory as to why a gender income gap exists, and then looks at a sample of college graduates in order to show that there is a *significant* difference between college men and women's starting salaries. It then follows these graduates over time to show that the income gap increases.

This paper takes a section by section approach to address the problem of wage differentials between college men and women. Section II introduces the theoretical foundation for this subject. Section III lays out the hypotheses and explains the theoretical model and data. Section IV discusses the results of the model and Section V draws conclusions from the results and makes policy implications.

II. Background

Why are salaries different for men and women? This is a question that many scholars have wrestled with. Economists draw on their knowledge of labor markets in order to answer this question. Their answers can be divided into two categories: those that affect the supply of labor and those that affect the demand for labor. This section outlines their answers in relation to the research problem.

A. Supply-side Theories

Supply-side theories of the gender wage gap focus on the possibility of differences in tastes, qualifications, education, formal training, or other productivity

related characteristics. (Blau 182) One theory that uses these characteristics is the human capital model by Gary Becker. He argues that skills and qualifications enhance a worker's productivity and can increase the value of that worker to the employer. The skills and qualifications, which contribute to people's productivity, are referred to as their human capital. Therefore, the wage a worker is paid is not only compensation for the time a person spends working for the firm, but also compensation for the use of a person's human capital during the time spent working. Following this line of reasoning, it is argued that wages provide a measurable return on human capital. This would imply that women earn less than men, because they have less human capital. In other words, the difference in wages between men and women is based on the differences of education and experience each group receives.

In this paper there are built-in controls for human capital because the sample consists of college graduates who are about the same age and have very little work experience. Therefore, from a human capital perspective, it can be argued that college graduates in the same field who have the same education and little professional experience should have similar starting salaries. Yet, according to the examples cited in the introduction, this is not true. Men and women entering into the same fields with the same years of education are earning different salaries. Therefore, other theories must be considered to explain the differences in pay between men and women.

Another theory based on the human capital model argues that there are systematic differences in the type of human capital men and women obtain, thus causing the gender earnings gap. Women may be more likely to invest in human capital that has a high nonmarket return, while men tend to invest in human capital with a high return in wages

but little increase in satisfaction. The educational choices that men and women make may explain why there is a gap in income, because these choices affect the supply of labor. The reasons why men and women may choose differently are explored further in the following paragraphs.

One reason men and women might choose different college majors could be because they are aware that there is a depreciation of human capital. With changing technology, workers must stay current with their human capital skills. What was once the norm for an occupation can become obsolete. It is easiest to keep skills current by continuously being in the work force. Men are more likely than women to work continuously and to have more tenure. Women are more likely to have work interruptions than men. A study by Jacobsen and Levin finds that women who have a worklife gap subsequently have a partial rebound in earnings, but never catch up with women who work continuously. (1992) People who leave the workforce are at a disadvantage compared to those who continuously work. Women may choose fields that are less dynamic in anticipation of a discontinuity in their career. Fields that are less dynamic will have a lower income penalty for those re-entering the field. However, dynamic fields typically pay higher salaries to reward those who keep their human capital skills current. If the majority of women are not entering dynamic fields, then this will cause an income gap.

Another way to keep human capital skills current is through on-the-job training. It is difficult to find data on the amount of training that men and women receive. However, it is argued that employers may also expect women to have a gap in their working life and therefore are more reluctant to train female employees. This would

mean that men would receive more on-the-job training and would amass more human capital than women, thus causing an income gap.

Another theory for the differences in choice of occupation or major is the feedback effect. If women believe that some occupational fields are more discriminating than others, then they may choose to invest in the fields with less discrimination. This could explain why women enter female-dominated fields. In female-dominated fields women see fewer barriers in advancing their careers. The feedback effect theory argues that women recognize discrimination in the labor market and choose their careers to avoid such discrimination. Occupations that are lower-paying but less discriminatory could be relatively more attractive to women than they would be in a world with no discrimination.

A sociological approach can be used to determine why men and women choose different occupations. Linda Subich argues that men and women's choices are different because they have differing attitudes towards the job market in relation to their sex-roles. The sex-role refers to the stereotypes associated with masculine and feminine behavior. It is the sex-role that has an effect on women's choice of field and therefore their salaries in relation to their male counterparts. (1989)

A study by Randall Filer showed that men and women are looking for different types of jobs. In this study, Filer asked men and women to rate various job characteristics in terms of their desirability. Men valued variety, autonomy, challenge, and applicability of their skills, while women valued role clarity, better relations with coworkers, and more freedom to take time off from work. Another study found that women have a higher concern for clean working environments and for attaining direct

satisfaction from work, while men were more concerned about the content of their work. (Agassi 1982) This could affect wages, because jobs that have poor working conditions must have a wage premium to make them desirable to workers. If women are more likely than men to choose jobs with relatively pleasant working conditions, their earnings will be lower, all else being equal. Differences in preferences for work characteristics may account for earnings differences both directly due to job choice and indirectly through their effect on investment in particular types of human capital. A study of young people that collected data on college major and job preferences found that the sexes differed significantly in both areas. Differences in college major accounted for 28 to 43 percent of the wage gap and differences in job preferences accounted for 6 to 27 percent (Daymont 1984).

Although men and women have different preferences in relation to the job market, it is hard to determine the line drawn between a woman's voluntary choice and a choice made by influences in the environment. For example, Linda Subich argues that men and women receive different salaries due to the fact that women are given imperfect information about the job market. Women are encouraged to enter traditional female occupations that use skills associated with their sex-role. For instance, teaching and nursing are traditional female occupations, because they require women to use their maternal instincts. This crowding of women into heavily female occupations artificially increases the labor supply for those occupations and drives down its wages. So women who enter female-dominated occupations have lower salaries than men.

According to Linda Subich, the sex-role affects women's earnings directly. Some characteristics of the female sex-role include low self-confidence and a fear of taking

risks. Subich argues that women have lower self-confidence than men, so they are less likely to ask for a higher salary or pay increase (Subich 1989). The sex-role has taught women not to expect large salaries or rewards for work well done. This makes it easier for women to "settle" for a job with lower paying salaries than men. Subich also argues that women are less likely to take risks than men are. As a result, women are more willing to accept less risky and low-paying occupations. Over time, these sex-role traits continue to increase the gender gap between salaries.

These theories are all supply-side explanations for why there is a difference in salary between men and women. If men and women are choosing to gain different human capital skills, some fields will have a greater supply of labor than others. Those fields with a greater supply of workers will have lower wages. Supply-side explanations of male-female wage differentials suggest that women are concentrated in different fields than men due to sex-role characteristics, feedback effects, imperfect information, and depreciation effects of human capital. This "crowding" of women increases the supply of labor in female-dominated fields and causes women to have lower wages than men.

B.Demand-side Theories

There are also demand-side theories for the gender income gap. Most of these theories involve forms of discrimination. Gary Becker defines discrimination as "a personal prejudice" or "a taste against associating with a particular group" (Blau 1986). Workplace discrimination occurs when two persons who have equal productivity and tastes for work conditions, but who are members of different groups, receive different outcomes in the workplace in terms of wages they are paid and their access to jobs

(Jacobsen 1994). There are many forms of discrimination. Some of these forms include employer, employee, customer, and statistical discrimination. All of these forms of discrimination can have an effect on women's wages.

In employer discrimination, employers are willing to trade off profits for higher wages to desired employees in order to avoid contact with undesired employees. Employers could use sex-role characteristics to determine that women are undesirable employees and therefore give women lower wages. This argument is widely used, but it is also flawed. This is because it does not support a long-run competitive market equilibrium. A profit-maximizing company would hire more of the undesirable group at the lower wage and earn more profits than a discriminating competitor, thus bringing wages back to equilibrium between the groups. However, in an industry with few competitors wage differentials could persist if the few firms were discriminatory.

In employee discrimination, employees have a taste for discrimination and must be paid more to work with the undesirable group. This leads employers to prefer to run segregated firms, even though they themselves are not prejudiced. This model can refer to occupational proximity as well as physical proximity. If male employees require higher wages only in order to work with women in the same occupation but are indifferent to the presence of women in the firm in other occupations, then a firm may be integrated, but be segregated by occupation within the firm. So women would not be promoted and therefore have lower wages. This model can also be modified to have an interesting feedback property. If prejudiced men cannot work as efficiently in integrated firms as in segregated firms, then female marginal productivity is lowered. In other words, adding a woman to an all-male firm results in less of an increase in revenue than

adding another man. So even though women need be no different than men in human capital endowment and employers pay wages equal to marginal product, firms will pay women less than men. (Jacobsen 1994)

There also exists customer discrimination. If a customer has a taste for discrimination, then customers will seek to purchase services from firms that do not employ members of the disliked group. In order to remain profitable, firms must either pay the disliked group members less to make up for the lowered revenue associated with their employment or avoid hiring them completely. Women may earn less because they are causing the firm to earn less of a profit.

Statistical discrimination can also occur. When hunting for a job, individuals are unable to perfectly signal actual productive ability to employers. Therefore employers may use group averages to determine wages. If an employer infers that women as a group are less productive than men, then wages will reflect this. Another factor besides ability differences leading to statistical discrimination is reliability differences. People often point to the higher turnover rates of women relative to men in arguing that employers are justified in preferring men over women as employees. If the costs involved in training men and women are monetarily equal, then there are higher costs for women because they will spend less time with the company. Also, women are more likely to be absent than men, both for illness and for other reasons. This statistic also makes women less desirable than men in the job market.

All of the theories of discrimination just reviewed suggest that women may be at a disadvantage in the job market due to discriminatory tastes and the gender preferences of the employer, other employees, or customers. These discriminatory tastes depress

women's salaries in order to make them more desirable in the workplace. Thus women find themselves accepting lower salaries in order to make up for the stereotypical shortcomings associated with being female.

III. Empirical Model and Data

The purpose of this research is to explain why there is a gender gap in the starting salaries of college graduates and to determine how quickly this gap increases over time. By using college graduates, this study controls for the human capital of men and women in order to determine what other factors are creating a gender income gap. I hypothesize that the gap between men and women's starting salaries can be attributed to the supply-side theories that affect what fields men and women choose and to the demand-side theories of discrimination. Also, I hypothesize that over time the gap between men and women's salaries increases.

In order to test this hypothesis, I gathered the data for the empirical model from the National Longitudinal Survey of Youth, 1997 (NLSY). The NLSY is a database that is derived from in-person interviews with 12,686 people between 1979 and 1996. My study restricts the sample to members of the NLSY who graduated from college in 1986. This survey year was chosen because it contained the largest sample of college graduates (303 respondents, 152 women and 151 men). The model looks at these graduates' income, gender, major, the number of hours worked, and tenure to determine whether or not there is a difference in men and women's starting salaries. As seen in Table 1, there is a gap in average starting salaries between men and women. A major purpose of this

study is to explain this gap and to examine what happens to the pay gap between men and women between 1987 and 1995.

Table 1: Sample's Means for 1987

Variable	Mean for Women	Mean for Men	Overall Mean
Income	$16856.2	$20362.8	$18621.7
Percent of Women in Major	59.8%	44.1%	51.9%
Hours Worked (annually)	1823.7	1895.5	1859.6

OLS regression is used to test my hypotheses. Income is the dependent variable and is tested against gender, percentage of women in chosen majors of study, esteem, and hours worked to see what effect each variable has on income. My regression equation takes the form:

$$\text{INCOME} = \alpha + \beta_1\text{GENDER} + \beta_2\text{MAJOR} + \beta_3\text{HOURS WORKED} + \beta_4\text{TENURE}$$

This regression was run for 1987, the year graduates began working and then re-run for the years 1988 to 1995 (excluding 1994 due to lack of data) to determine how the income gap changes over time. Below, each variable is discussed individually in accordance with the hypothesis and theory. Please refer to Table 2 for variable definitions and expected signs of the coefficients.

Table 2: Variable Definitions and their Expected Signs

Variable	Type	Explanation	Expected Sign
INCOME	Dependent	Total income from wages and salary for calendar year	
GENDER	Independent	Dummy variable indicating the gender of the respondent. Takes on a value of 1 for male and 0 for female.	Positive
MAJOR	Independent	Percentage of women studying a particular major	Negative
HOURS WORKED	Independent	Number of hours worked for calendar year.	Positive
TENURE	Independent	Number of weeks respondent has been at job.	Positive

The INCOME variable is the total income and wages that the respondent has earned for the year and is the dependent variable in this study. Other research has used the natural log of income for the dependent variable in order to avoid heteroskedasticity. Heteroskedasticity can be a problem when looking at income because the variation of earnings for men can be larger or smaller than the variation of earnings for women. However, because this study looks at a very small time period for the earnings of men and women, the differences in variation should not occur. To be sure of this, I ran a regression with the natural log of income as the dependent variable and the results were not as good. Less of the regression was explained when the natural log of income is used. Therefore, for my study, using INCOME as the dependent variable is fine.

A dummy variable for GENDER is used in the regression analysis to capture the effects of the demand-side theories on income. A value of zero is given for female respondents and a value of one is given for male respondents. According to demand-side theories of discrimination, this variable should have a positive effect on income. In other words, as the variable equals one, income should increase. This is because men are considered the favored group; so if men are favored over women by employers, employees, or customers then men's salaries will be higher than women's and this discrimination effect will be picked up in the GENDER variable.

The variable called MAJOR is the percentage of women in the field that the graduate was majoring in at the time he or she graduated. These percentages were obtained from the 5 Sept. 1990 edition of The Chronicle of Higher Education. This variable is included in the income regression to determine how male-dominated fields pay in relation to female-dominated fields. According to supply-side theories, this variable should have a negative effect on income. Women are choosing to enter into female-dominated fields because of the depreciation effects on human capital, feedback effects, imperfect information, and sex-role characteristics. As women continue to enter into the same few fields, the supply of labor for these fields increases and pushes wages down. Therefore, as the percentage of women in the field increase, income for these fields should decrease.

The remaining two variables are control variables for the effects of work experience on earnings. The HOURS WORKED variable is used to control for the effect of hours of work on pay. Pay can differ a great deal depending on the number of hours worked. This variable, of course, should have a positive effect on income, as the number

of hours worked increases, income will also increase. The TENURE variable measures the number of weeks the respondent has worked for his or her employer at the time of the survey. TENURE should have a positive effect on income. In other words, the longer the respondent stays with a company, the greater his or her income is.

It would be desirable that a more direct measure of discrimination be included in the model than the dummy variable for gender. Unfortunately gender discrimination is very difficult to measure empirically. However, there is some evidence from the NLSY database that discriminatory attitudes exist and that many women feel that they have been victims of employment discrimination. Respondents were asked many questions about their attitudes and beliefs, including questions about the respondents' attitudes towards women. I focused on three questions. The first question asked whether respondents agreed with the statement that a woman's place is in the home. The second question asked whether respondents agreed that women are happier in traditional roles. The third question asked whether or not the respondent felt that he or she was discriminated against based on their gender when looking for a job. These questions are important, but they were only asked in 1979, 1982, and 1987. This factor makes it difficult to include into the model, however, the results are still important. Over time, these variables show that respondents' attitudes are shifting. Fewer people agree that a woman's place is in the home and that women are happier in traditional roles. Also, fewer respondents believe that they were discriminated against based on sex. (See Table 3) Although respondent's attitudes are shifting, these results show that discrimination is still occurring. This is indicated by the response to the last question. In 1982, 12.5% of women believed that they were discriminated against when looking for a job. This shows that there is a basis

for including discrimination into the model. There is not an acceptable empirical method to use these measures in the regressions. These measures supplement the analysis by showing that even though discrimination exists, attitudes towards women are changing.

Table 3: Respondents' Views on Women

Statement (Year)	Percent of Females who Agreed	Percent of Males who Agreed
A woman's place is in the home.		
1979	7.9	19.3
1982	3.3	9.4
1987	4.1	1.3
Women are happier in traditional roles.		
1979	15.4	20.6
1982	9.3	17.4
1987	7.9	19.3
I had a problem getting a good job due to sex discrimination.		
1979	17.4	2.2
1982	12.5	3.3
1987	Not Asked	Not Asked

IV. Results

The regression using 1987 data accounted for approximately thirty-eight percent of the variance in income. All variables achieved the predicted results and were significant. The regression can be represented by the following equation:

$$\text{INCOME} = \underset{(1.609)}{3800.84} + \underset{(1.607)}{1803.9}\,(\text{GENDER}) - \underset{(-2.895)}{75.2}\,(\text{MAJOR})$$

$$+ \underset{(10.812)}{8.7}\,(\text{HOURS WORKED}) + \underset{(3.182)}{17.7}\,(\text{TENURE})$$

(t-stat)

The coefficient of the GENDER variable is positive and significant. According to the regression women earned $1803 less than men, in other words, there is a $1803 wage penalty associated with being female. This suggests that there could be discrimination based on gender because after controlling for education and work experience, men still earned more than women.

The coefficient of the MAJOR variable is negative and significant to the .01 level. This variable measures the change in annual salary for every one percent increase of women in a field. In 1987, for every one percent increase in the number of females in a field, wages decreased by approximately $75.

Table 4 puts these results in perspective. The first column of numbers shows the percentage of females for the selected disciplines. This ranges from 13.7% in engineering to 85.3% in the health sciences. The average value of MAJOR for the men in the NLSY sample is 44.1% while the average value of MAJOR for women is 59.8%. This indicates that men in the sample choose very different majors than women. Columns three and four estimate the combined effects of gender and choice of major on

men and women respectively. The values reported are derived by multiplying the coefficients to GENDER and MAJOR by the appropriate values. In terms of the regression, the equation is the following:

$$\beta_1(\text{GENDER} - 1) + \beta_2(\text{MAJOR} - 44.1)$$

The GENDER variable is subtracted by one in order to measure the effects of the wage penalty associated with being female. Men have a value of one in the study, when GENDER is subtracted by one the term β_1(GENDER - 1) drops out. Women have a value of zero in the study, when their GENDER is subtracted by one the term β_1(GENDER - 1) becomes the negative value of the GENDER coefficient. This represents the wage penalty that women incur, regardless of their field of study. The MAJOR variable is subtracted by 44.1% because this number is the average value of MAJOR for men; therefore it is the basis of comparison for all occupations. The estimated wage effects show how much more or less respondents are earning in comparison to the sample's average male. For example, in 1987 77% of those who graduated with a teaching certificate were female. According to the model, male respondents who entered into teaching earned at least $2460 less than the sample's average male for entering this female-dominated field! Men earn less in female-dominated fields, however they are still earning more than women in each field, according to the model. Therefore, it is possible for men to experience a wage penalty, however the wage penalty is not as large for men as it is for women. Also, the fields containing the majority of women have the greatest wage penalty. So more women are

being affected by large wage penalties. The MAJOR coefficient is an extremely important finding. According to Subich and Blau, since most women are influenced into female-dominated fields and occupations through their environment, they are never given an opportunity to earn salaries as high as men.

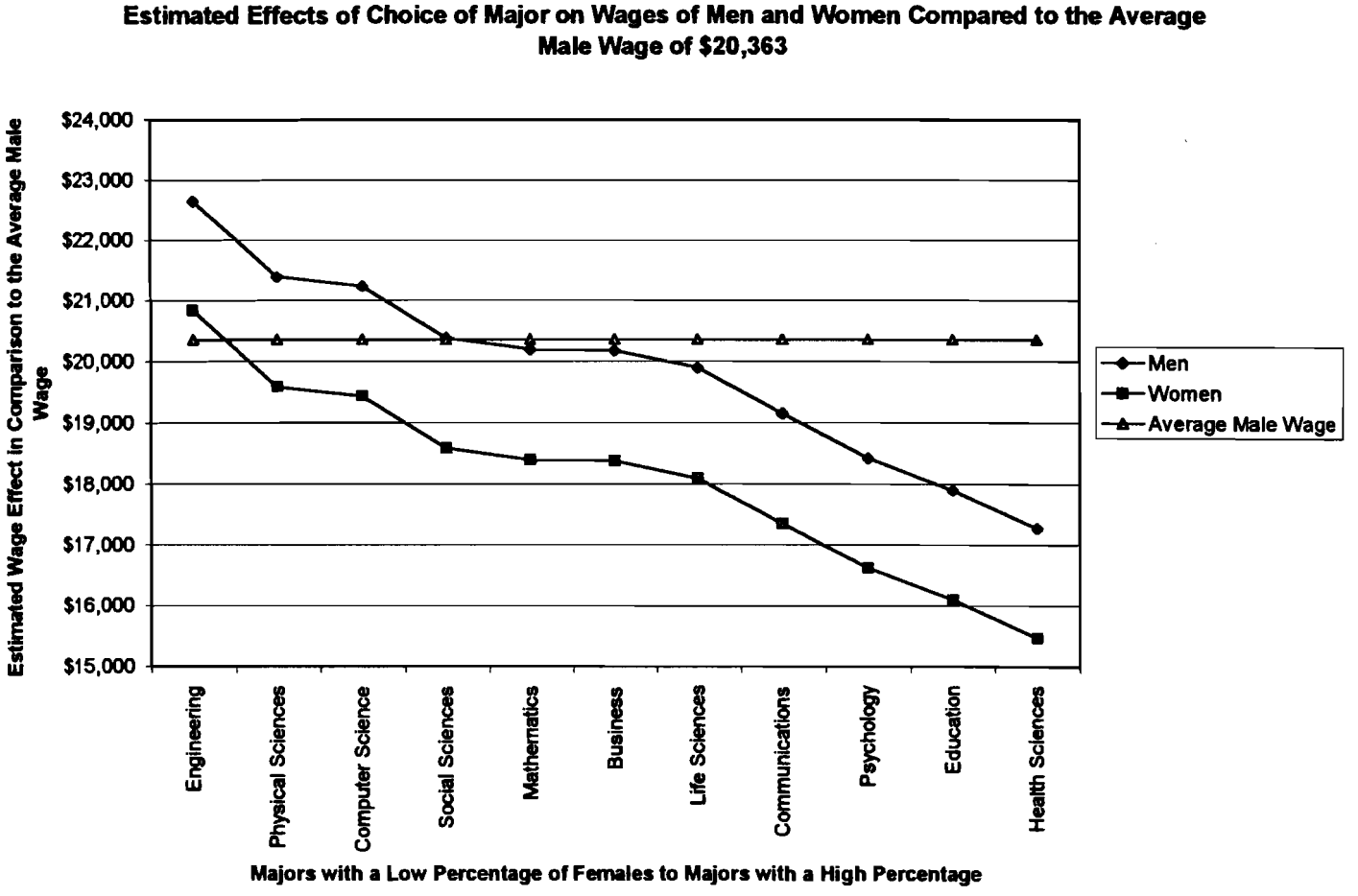
Table 4: Estimated Effects of Choice of Major on Wages for 1987
(Ceteris Paribus)

Field of Study	**Percentage of Females in Major for 1987**	**Estimated Wage Effects for Men (In Dollars)**	**Estimated Wage Effects for Women (In Dollars)**
Engineering	13.7	2280	476
Physical Sciences	30.3	1035	-769
Computer Science	32.4	877.5	-926.5
Social Sciences	43.8	22.5	-1781.5
Mathematics	46.4	-172.5	-1976.5
Business	46.6	-187.5	-1991.5
Life Sciences	50.3	-465	-2269
Communications	60.2	-1207.5	-3011.5
Psychology	70.0	-1942.5	-3746.5
Education	76.9	-2460	-4264
Health Sciences	85.3	-3090	-4894

Once the wage benefits or penalties associated with the choice of major have been determined, they can be added to the sample's average male's salary in order to predict what men and women's starting salaries should be according to the model. This is shown in Graph 1. The graph emphasizes the income gap between men and women. According

to the model, the only field that women can enter and earn more than the sample's average male's salary of $20,363 is engineering. The income gap between men and women exists in every field of study, yet the overall income gap is even more pronounced than it first appears to be. Since the majority of women are in female-dominated fields, such as health sciences, education, and psychology, they are earning the lower estimated wages. However, the majority of men are concentrated in such fields as engineering, physical sciences, and computer science, and are earning the higher estimated wages. Therefore women are earning lower salaries than men due to their choice of field and due to their gender.

Graph 1



The control variables in the regression equation shown on page 17 also showed the expected signs. The coefficient of the HOURS WORKED variable is positive and significant. The coefficient of the TENURE variable is also positive and significant.

The regression results show that many women have lower wages than men for two reasons. First, they are more likely to enter female-dominated fields of study which pay less than male-dominated fields of study. This was shown by the coefficient of MAJOR. Second, even after controlling for MAJOR and work experience women are at a wage disadvantage. This was shown by the negative coefficient for GENDER. This regression shows that women who enter into female-dominated areas of study earn starting salaries that are on average $2982 less than men's starting salaries.

Once it was determined that there is a gap between men and women's starting salaries, the gap was followed over time to see how rapidly it changed. The regressions were run for the years 1988 to 1995, with the exception of 1994 due to lack of data. The results are dramatic; however, it is important to note that over time the sample size decreased. This could be due to the mobility of people and the difficulty to continuously locate respondents. The regressions over time use an increasingly smaller sample, but the results are still useful in determining what happens to the income gap. The results of each year are discussed below. Please refer to Table 5 for further clarification.

Table 5: Regression Results for 1987 to 1995

Variable and Expected Sign	1987 Regression	1988 Regression	1989 Regression	1990 Regression	1991 Regression	1992 Regression	1993 Regression	1995 Regression
GENDER Coefficient (+)	1803.9*	4857.0***	4133.3***	5667.8***	7149.7***	9537.6***	8030.4***	15852.7***
MAJOR Coefficient (-)	-75.19***	-151.80***	-151.28***	-120.21***	-101.73**	-106.29*	-108.76*	93.58
HOURS WORKED Coefficient (+)	8.7***	5.7***	5.4***	8.3***	6.8***	8.8***	10.9***	12.1***
TENURE Coefficient (+)	17.7***	23.3***	26.4***	13.2***	12.2*	21.1***	5.6	10.5
R-Square	.388	.205	.278	.265	.180	.220	.218	.226
Sample Size	303	272	283	257	258	258	251	248

*Significant to the .1 level

**Significant to the .05 level

***Significant to the .01 level

The annual regressions show that over time the income gap does increase. This is seen by the increasing coefficient of GENDER throughout the nine-year time span. These regressions accounted for approximately 25 percent of the variance in income. The r-square ranged from .180 to .388. Also, the coefficients for each regression showed the expected signs. The most striking result of these regressions is how rapidly the gender income gap increases. (See Table 5) From 1987 to 1988 the coefficients of the GENDER and MAJOR variables more than double! This increase is surprising. One explanation for this large increase is due to the amount of on-the-job training that men

and women receive. Discriminatory employers may use sex-role theory and statistical discrimination to argue that women will leave the job market to have children and will therefore not stay with the company as long as men. This makes on-the-job training for women more expensive, so employers will not train women as much as men. If men have more training than women, then according to the human capital model, they are more valuable to their employer and will earn more money. This could be why the gender income gap increases rapidly during the first few years of work.

It is important to recognize that in all regressions beyond 1987, the coefficient of the GENDER variable is significant beyond the .01 level and is increasing over the nine-year period. This shows that the wage penalty associated with being female does not diminish. Another important result is the MAJOR variable. The coefficient of the MAJOR variable increases rapidly, almost doubling in 1988, but then it levels off and begins to decrease and becomes less significant. This indicates that respondents who choose to enter female-dominated fields experience large wage penalties early in their careers. However, these penalties do not increase over time, unlike the GENDER coefficient. The penalties for choosing a female-dominated field do not continuously increase, however the penalties associated with being female are still increasing over time. By 1995, nine years after graduation, men are earning $15,852 more than women.

The increase in the income gap shows support for discrimination theories. Women have lower salaries to make up for the stereotypical shortcomings associated with the female sex-role. Through supplemental research, I showed that attitudes towards women are changing and in turn, decreasing discrimination. Although discrimination is decreasing, these results show that it is still very evident.

V. Conclusion and Policy Implications

This research study supports the statement that men's starting salaries are greater than women's. The coefficient on the GENDER variable showed that men's starting salaries are on average over $1803 more than women's, and this gap increases when women choose to enter a predominately female occupation, *ceteris paribus*.

The regressions comparing earnings over time showed that the income gap increases as men and women continue to work. However, as men and women continued to work, my sample size became smaller. This was because more respondents had missing data due to an inability to locate these respondents. One reason that respondents may have dropped out of the study could be because they changed jobs or dropped out of the labor market completely. A question that arises is do men who drop out of the study drop out for different reasons than women? For example, women who most strongly feel the effects of discrimination may change employers or entirely drop out of the labor force. This would have direct effects on my study. If it could be determined that women are leaving the labor market to avoid discrimination then the gender income gap should be greater. This is an interesting possibility for future researchers to consider.

In terms of policy implications, incentives need to be put into place to encourage more women to obtain human capital that has a higher return. This may involve the creation of educational programs and scholarships that would encourage women to enter non-traditional occupations. There is also a need for programs that increase the acceptability of non-traditional occupational choices made by women. This is a necessary program for adults who can encourage young children to enter non-traditional fields. Re-education should especially focus on counselors and teachers in the school

system, in order to change value systems and expectant behavior of gender, and to give women full information about the job market. This re-education would decrease discrimination and increase the opportunities available to women.

Another policy implication comes from the idea that college education is more expensive for women than men. This is because women are earning less than men after graduation. College is especially more expensive for women who finance their education through loans. Since women earn less money than men, it takes them longer to pay for their education. This means that women are paying more interest on their loans, making their education more expensive. Perhaps, women should be given an educational discount by institutions of higher education or a subsidy from the government as an incentive to receive a higher education and make it more affordable.

The policy implications are controversial and would be difficult to implement, but they are necessary for women to be treated as equals in the job market.

References

Agassi, Judith Buber. Comparing the Work Attitudes of Women and Men. Lexington: Lexington Books, 1982.

Becker, Gary S. The Economics of Discrimination. 2nd ed. Chicago: The University of Chicago, 1971.

---. Human Capital. 3rd ed. Chicago: The University of Chicago, 1993.

Blau, Francine D., and Marianne A. Ferber. The Economics of Women, Men, and Work. Englewood Cliffs: Prentice-Hall, 1986.

"Earned Degrees Conferred, 1987-1988." Chronicle of Higher Education 5 Sept. 1990: 15.

Daymont, Thomas, and Paul Andrisani. "Job Preferences, College Major, and the Gender Gap in Earnings." Journal of Human Resources Summer 1984: 412-413.

Dunn, Dana. "Gender and Earnings." Women and Work. Ed. Paula J. Dubek and Kathryn Borman. New Brunswick: Rutgers, 1996.

Filer, Randall. "Male-Female Wage Differences: The Importance of Compensating Differentials." Industrial and Labor Relations Review April 1985: 426-437.

Goldin, Claudia. "Understanding the Gender Gap: An Economic History of American Women." Equal Employment Opportunity. Ed. by Paul Burstein. New York: Aldine de Gruyter, 1994. 17-26.

Green, Carole and Marianne Ferber. "Occupational Segregation and the Earnings Gap." Essays on the Economics of Discrimination. Ed. by Emily Hoffman. Kalamazoo: Upjohn Institute, 1991. 145-165.

Hatt, Sue. Gender, Work and Labour Markets. New York: St. Martin's Press, 1997.

Jacobsen, Joyce. The Economics of Gender. Cambridge: Blackwell, 1994.

Jacobsen, Joyce and Laurence Levin. "The Effects of Intermittent Labor Force Attachment on Female Earnings." 1992 The Economics of Gender. Ed. Joyce Jacobsen. Cambridge: Blackwell, 1994. 272-274.

National Association of Colleges and Employers. Salary Survey 35.4 (1996).

National Association of Colleges and Employers. Salary Survey 36.4 (1997).

National Longitudinal Survey of Youth. Center for Human Resource Research. 1997.

Sadker, Myra and David Sadker. Failing at Fairness. New York: Touchstone, 1994.

Subich, Linda Mezydlo, Gerald Barret, Dennis Doverspike, and Ralph Alexander. "The Effects of Sex-Role-Related Factors on Occupational Choice and Salary." Pay Equity: Empirical Inquiries. Ed. Robert T. Micheal, Heidi Hartmann, and Brigid O'Farrell. Washington, D.C.: National Academy, 1989. 91-104.

Whittaker, Julie. "Gender Segregated Occupations: Has the penalty for working in occupations composed primarily of women diminished over time?" Diss. University of Wisconsin-Madison, 1996.