United States General Accounting Office

GAO

Report to Congressional Requesters

October 2003

WOMEN'S EARNINGS

Work Patterns Partially Explain Difference between Men's and Women's Earnings

GAO-04-35

Contents

Abbreviations

CPS	Current Population Survey
OLS	ordinary least squares
PSID	Panel Study of Income Dynamics

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United States General Accounting Office
Washington, DC 20548

October 31, 2003

The Honorable Carolyn B. Maloney
The Honorable John D. Dingell
House of Representatives

Despite extensive research on the progress that women have made toward equal pay and career advancement opportunities over the past several decades, there is no consensus about the magnitude of earnings differences between men and women and why differences may exist. According to data from the Department of Labor's Current Population Survey (CPS), women have typically earned less than men.[1] Specifically, in 2001, the published CPS data showed that for full-time wage and salary workers, women's weekly earnings were about three-fourths of men's.[2] However, this difference does not reflect key factors, such as work experience and education, that may affect the level of earnings individuals receive. Studies that attempt to account for key factors have provided a more comprehensive estimate of the earnings difference. However, recent information is lacking because many studies on earnings differences relied on data that predated the mid-1990s. But, even when accounting for these factors, questions remain about the size of and reasons for any earnings difference. To provide insight into these issues, you asked that we examine the factors that contribute to differences in men's and women's earnings. On October 2, 2003, we briefed you on the results of our analysis. This report formally conveys the information provided during that briefing (see app. I).

To address this issue, we carried out two types of analyses. We performed a quantitative analysis to determine differences in earnings by gender and what factors may account for these differences. The statistical model we

[1]The CPS is a monthly survey that obtains key labor force data, such as employment, wages, and occupations.

[2]This figure represents weekly earnings of full-time workers, but considering different populations may result in different earnings differences. For example, according to a GAO calculation based on CPS data from 2000 using both full-time and part-time workers, women's annual earnings were about half of men's.

developed used data from the Panel Study of Income Dynamics (PSID),[3] a nationally representative longitudinal data set that includes a variety of demographic, family, and work-related characteristics for individuals over time. We tracked work and life histories of individuals who were between ages 25 and 65 at some point between 1983 and 2000. Using our statistical model, we estimated how earnings differ between men and women after controlling for numerous factors that can influence an individual's earnings. (For more information about this analysis and its limitations, see app. II.) To supplement this analysis, we reviewed the literature and interviewed a variety of individuals with expertise on earnings and other workplace issues[4] to obtain a broad range of perspectives on reasons why workers make certain career and workplace decisions that could affect earnings. In addition, we contacted employers to discuss these issues as well as to identify what policies employers offered to help workers manage work and other life responsibilities. (For more information about this analysis, see app. III.) We conducted our work from September 2002 to October 2003 in accordance with generally accepted government auditing standards.

In summary, we found:

- Of the many factors that account for differences in earnings between men and women, our model indicated that work patterns are key. Specifically, women have fewer years of work experience, work fewer hours per year, are less likely to work a full-time schedule, and leave the labor force for longer periods of time than men. Other factors that account for earnings differences include industry, occupation, race, marital status, and job tenure. When we account for differences between male and female work patterns as well as other key factors, women earned, on average, 80 percent of what men earned in 2000. While the difference fluctuated in each year we studied, there was a small but statistically significant decline in the earnings difference over the time period. (See table 2 in app. II.)

- Even after accounting for key factors that affect earnings, our model could not explain all of the difference in earnings between men and women. Due to inherent limitations in the survey data and in statistical analysis, we cannot determine whether this remaining difference is due to

[3]The PSID is a survey of a sample of U.S. individuals that collects economic and demographic data, with substantial detail on income sources and amounts, employment, family composition changes, and residential location.

[4]These individuals will be referred to as "experts" throughout the remainder of this report.

discrimination or other factors that may affect earnings. For example, some experts said that some women trade off career advancement or higher earnings for a job that offers flexibility to manage work and family responsibilities.

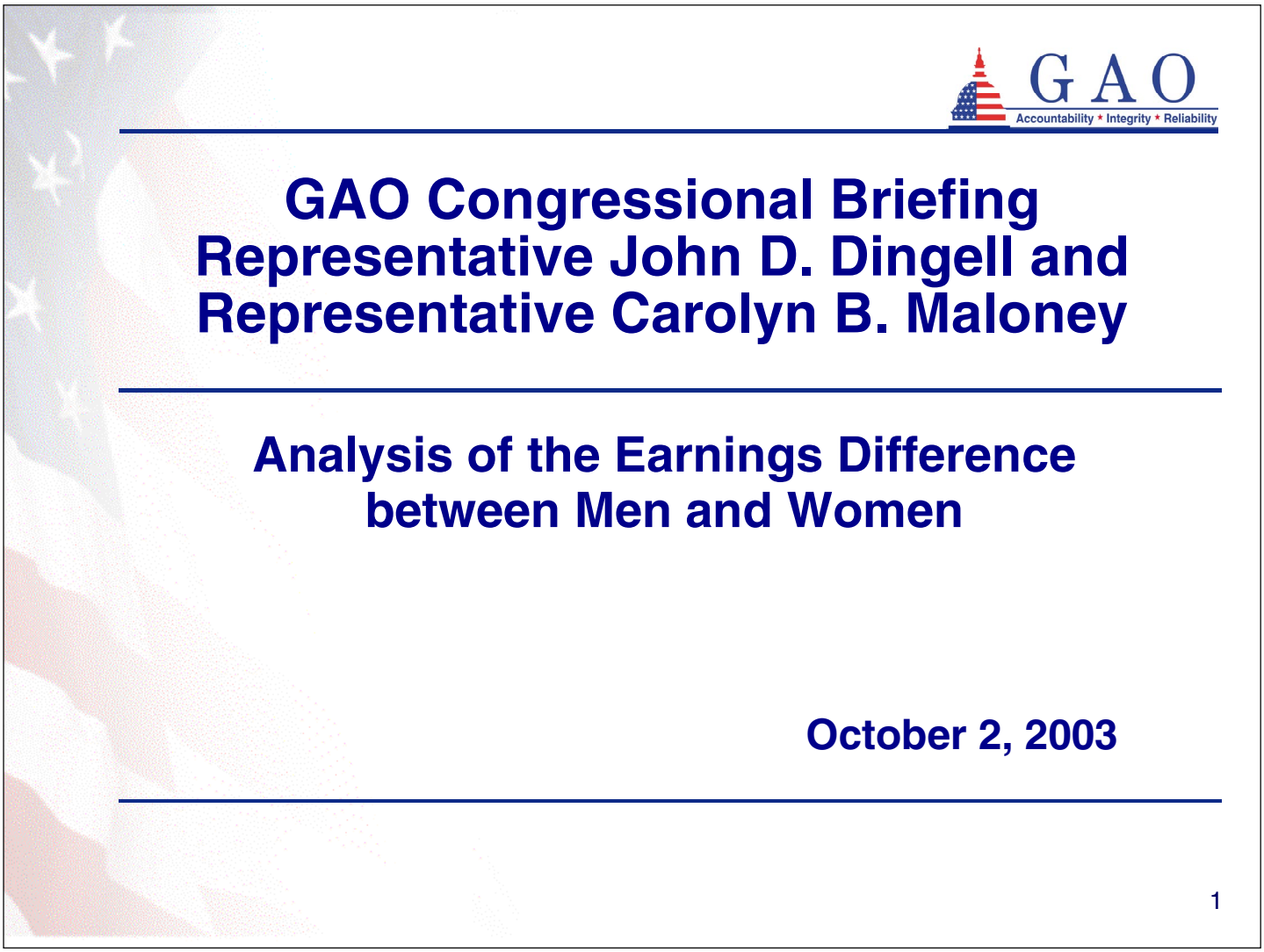
In conclusion, while we were able to account for much of the difference in earnings between men and women, we were not able to explain the remaining earnings difference. It is difficult to evaluate this remaining portion without a full understanding of what contributes to this difference. Specifically, an earnings difference that results from individuals' decisions about how to manage work and family responsibilities may not necessarily indicate a problem unless these decisions are not freely made. On the other hand, an earnings difference may result from discrimination in the workplace or subtler discrimination about what types of career or job choices women can make. Nonetheless, it is difficult, and in some cases, may be impossible, to precisely measure and quantify individual decisions and possible discrimination. Because these factors are not readily measurable, interpreting any remaining earnings difference is problematic.

As arranged with your offices, unless you announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this report. At that time, we will provide copies of this report to the Secretary of Labor and other interested parties. We will also make copies available to others upon request. In addition, the report will be available at no charge on GAO's Web site at http://www.gao.gov.

Please contact me or Lori Rectanus on (202) 512-7215 if you or your staff have any questions about this report. Other contacts and staff acknowledgments are listed in appendix IV.

Robert E. Robertson
Director, Education, Workforce, and
Income Security Issues

Appendix I: Briefing Slides



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Introduction

- Despite extensive research on the progress women have made toward equal pay, no consensus exists about the size of any earnings difference between men and women
- Some earnings studies have not accounted for key factors that affect earnings, such as work experience and education
- Even when accounting for such key factors, questions remain about the size of and reasons for any difference

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Key Question

- What factors contribute to differences in men's and women's earnings?

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Scope and Methodology

- We developed a statistical model to estimate how earnings differ between men and women after controlling for a comprehensive set of demographic, family, and work-related factors that can influence an individual's earnings
- We used the Panel Study of Income Dynamics, a nationally representative longitudinal data set that includes a variety of demographic, family, and work-related characteristics
- We tracked work and life histories of individuals who were between ages 25 and 65 at any point during the period 1983 through 2000

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Scope and Methodology (continued)

- To supplement our model, we reviewed literature and interviewed a variety of individuals to obtain a broad range of perspectives on why workers make certain career and workplace decisions that could affect earnings
- Experts reviewed our work
- We conducted our work from September 2002 to October 2003 in accordance with generally accepted government auditing standards

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Summary of Results

- Work patterns are important when accounting for some of the earnings difference between men and women
- After accounting for factors affecting earnings, women earned an average of 80 percent of what men earned in 2000
- Our model could not explain all of the earnings difference between men and women due to inherent limitations in the survey data and in statistical analysis

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Many Factors Account for Earnings Difference, but Work Patterns Are Key

- While many factors account for the earnings difference between men and women, work patterns are key
- Some of the other factors include industry, occupation, race, marital status, and job tenure
- Some of the factors that contribute to an earnings difference affect men and women differently, but we cannot explain why

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Work Patterns Are Important When Accounting for Earnings Difference

- Men's and women's work patterns differ:
  - Women have fewer years of work experience
  - Women work fewer hours per year
  - Women are less likely to work a full-time schedule
  - Women leave the labor force for longer periods of time

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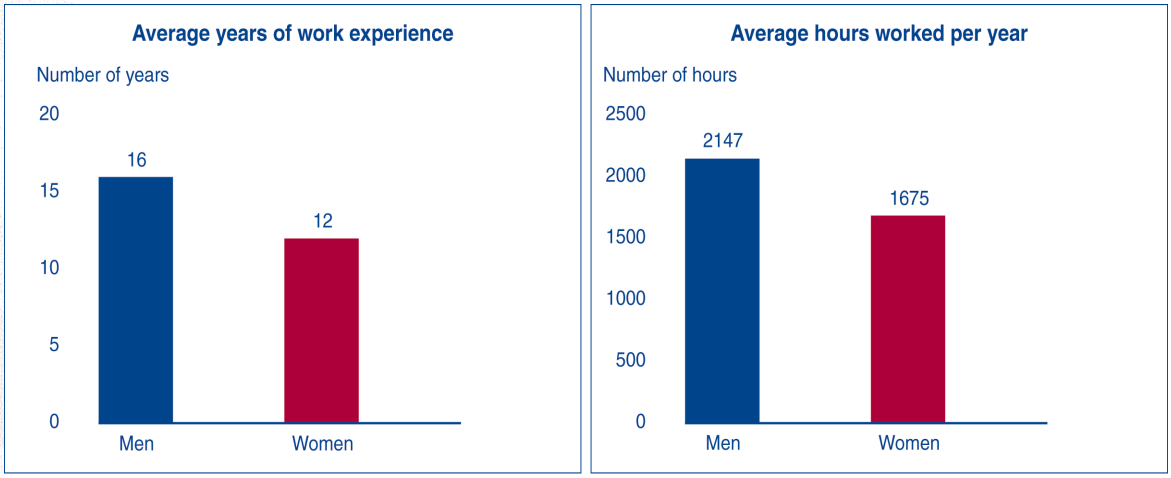
Work Patterns (continued)

- Years of work experience and hours worked per year differ for men and women



Source: GAO analysis of Panel Study of Income Dynamics data. (For more information, see app. II.)

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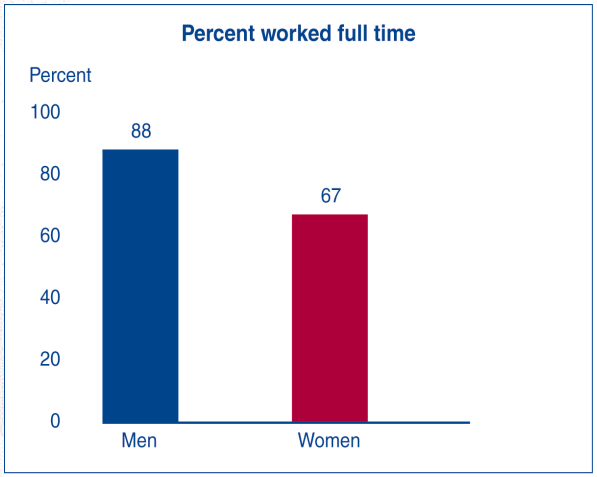
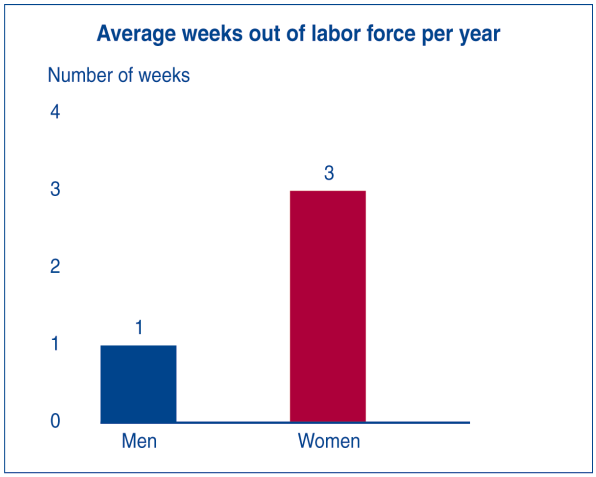
Work Patterns (continued)

- Men and women vary in terms of their full-time work and time out of the labor force





Source: GAO analysis of Panel Study of Income Dynamics data. (For more information, see app. II.)

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Perspectives on Why Work Patterns Differ

- Although the model could not explain why work patterns differ, according to experts and the literature, women are more likely to work part time or take leave from work to manage home and family responsibilities, such as caring for children

- According to employers, even when they offer part-time work or leave from work to all employees, women are more likely than men to use these options, although both men and women use other work arrangements

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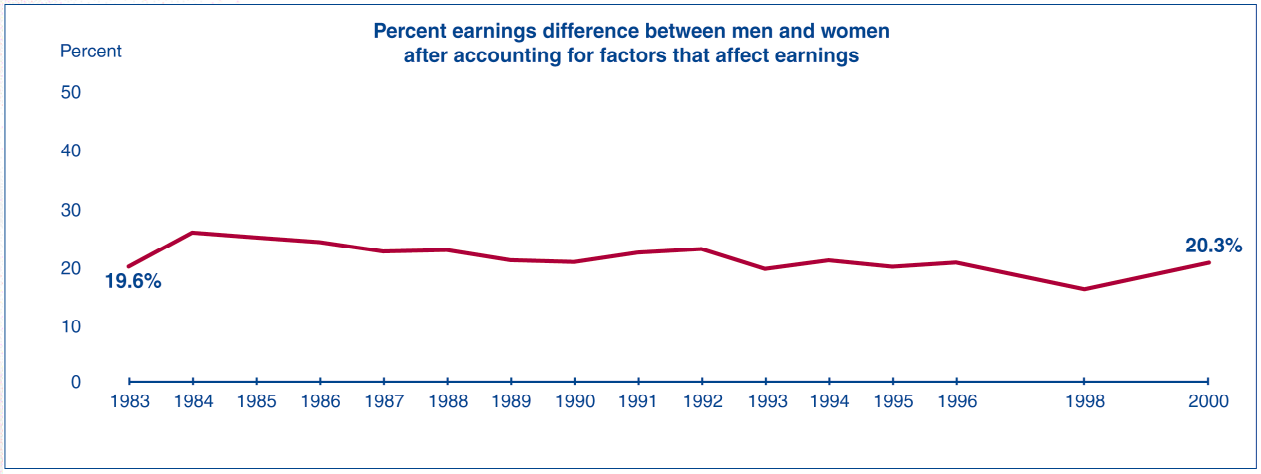
Men's and Women's Earnings Differ Even after Accounting for Key Factors



Source: GAO analysis of Panel Study of Income Dynamics data. (For more information, see app. II.)

As the graph shows, there were fluctuations in the earnings difference for each year we studied. Over the time period, there was a small but statistically significant decline in the average earnings difference between men and women.

Note: Data were collected annually through 1997 and then biennially starting in 1999.

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Potential Reasons for the Remaining Earnings Difference

- Our model could not explain all of the earnings difference between men and women due to inherent limitations in the survey data and in statistical analysis

- Some experts and literature identified potential reasons for an earnings difference:
  - some women trade off advancement or higher earnings for a job that offers flexibility to manage work and family responsibilities
  - discrimination resulting from societal views about acceptable roles for men and women or views about women in the workplace may affect women's earnings

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Some Women Trade off Earnings for Flexibility

- According to some experts and literature, some women trade off career advancement or higher earnings for a flexible job
  - For example, a woman may choose a human resources job that requires less travel and time in the office than an online position in the company, but offers less opportunity for advancement and higher earnings
  - For example, in medicine, a woman may choose family practice because it may be more accommodating to home and family than the surgical specialty, which offers relatively higher earnings. Surgeons' work is generally less predictable because it may require treating emergencies at all hours

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Discrimination May Also Affect Women's Earnings

- According to some experts and literature, those who work in traditionally female-dominated occupations generally receive less earnings
- Also, according to some experts, discrimination against women in the workplace negatively affects women's job opportunities, advancement, and therefore, earnings

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Concluding Observations

- While we could account for much of the earnings difference between men and women, we cannot explain all of the difference due to inherent limitations in the survey data and in statistical analysis
- It is difficult to evaluate the remaining difference without a full understanding of what contributes to the difference
  - An earnings difference resulting from individual decisions about how to manage work and family may not be a problem, unless the decisions are not freely made
  - An earnings difference may result from workplace discrimination or subtler discrimination about job choices women can make

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Concluding Observations (continued)

- It is difficult to measure and quantify individual decisions and possible discrimination
- Because these factors are not readily measurable, interpreting any remaining earnings difference between men and women is problematic

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Appendix II: GAO Analysis of the Earnings Difference between Men and Women

To analyze earnings differences between men and women, we conducted multivariate regression analyses of the determinants of individuals' annual earnings. The regression analyses relate individuals' annual earnings to many variables thought to influence earnings, such as number of hours worked, occupation, education, and experience. In an analysis of data that included men and women, we used a variable for gender to measure the average difference in earnings between men and women after accounting for the influence of other variables in the model. We also analyzed both men's and women's earnings in separate regressions and applied a frequently used decomposition method to the results to identify the important factors leading to earnings differences by gender.

This appendix provides information on (1) our findings from a review of previous research on earnings of men and women, (2) the data we used in our analysis, (3) the econometric model we developed, (4) the results from our model, and (5) the limitations of our analysis.

Review of Other Research on Earnings Differences

Our literature search consisted primarily of research in peer reviewed journals, chiefly in economics, sociology, and psychology. We concentrated on research about gender-related earnings differences, as opposed to, for example, race-related or age-related earnings differences. We focused on studies of populations within the United States, particularly, but not limited to, studies using the Panel Study of Income Dynamics (PSID)[1] or the Current Population Survey (CPS) databases, and studies conducted within the past 10 years. We also included any seminal work in the area. We reviewed each study's primary methodological approach (whether it used cross-sectional or panel data and whether it used general regression, time series, or other analytic estimation methods), the specific databases used, the years included in the study, the key variables in the analysis, and the principal results.

To study earnings differences, most of the studies we reviewed estimated a wage or earnings equation that relates individuals' wages or earnings to several independent variables, such as education, experience, occupation,

[1]The PSID is a longitudinal survey, ongoing since 1968, of a representative sample of U.S. individuals and the families they reside in. The central focus of the data is economic and demographic, with substantial detail on income sources and amounts, employment, family composition changes, and residential location. PSID data were collected annually through 1997 and biennially starting in 1999. The most recent survey available is 2001, which includes data from 2000.

industry, and region. In contrast to simple comparisons between the average wages or earnings of men and women, these studies attempted to determine whether a wage or earnings difference existed after accounting for differences between men and women in these variables.

The wage or earnings difference between men and women can be identified in two ways. Studies that pool data for men and women together can include a variable denoting the gender of the individuals. In a multivariate regression analysis, the coefficient on the gender variable represents the difference in earnings between men and women, holding constant the effects of the other variables. Alternatively, separate regression models can be estimated for men and women and a decomposition analysis can compare the results for the two genders.

Our review of the literature did not uncover much disagreement over the existence of an earnings difference after holding constant the effects of other variables. Rather, debate centered on the size of any difference and factors that might explain it. We found that the size of a difference can vary by model estimation procedures, the years included in the analysis, and the data set used. The wage or earnings difference, after controlling for several factors, varied from 2.5 percent to 47.5 percent. Few of the studies used data more recent than the mid-1990s.

The results of some studies on wage and earnings differences used ordinary least squares (OLS) regressions for analysis. Compared to analyses of uncontrolled wage and earnings data, OLS regression is an improvement because it allows for the control of some factors in the data. The strength of findings from OLS approaches has been questioned, however, because of at least three potentially significant biases.[2] First, the estimates can be biased if some factors that are related to individuals' earnings and that differ between men and women are omitted from the analysis (omitted variable bias or unobserved heterogeneity). Second, several of the independent variables may be closely interrelated with earnings (endogeneity). For example, earnings may be related to the number of hours an individual works, but the number of hours one chooses to work may depend on how much is earned by working. An OLS analysis assumes that no such interrelationships exist. If they do exist, OLS can produce biased estimates. Third, in the context of individuals'

[2]Moon-Kak Kim and Solomon W. Polachek, "Panel Estimates of Male-Female Earnings Functions," *Journal of Human Resources* 29:2 (1994): 406–28.

work decisions, OLS estimation can produce biased estimates when unobserved factors affect both the level of earnings and the probability that someone chooses to work (selection bias).

Data Used in Our Analysis

To conduct our analysis, we used the PSID rather than the CPS for two main reasons. First, by using data that follow individuals over a period of time, we can take into account individual work and life histories more specifically than CPS or other data sources. Several researchers have analyzed gender wage and earnings differences and have attempted to address potential unobserved heterogeneity bias using longitudinal data such as the PSID. Second, the PSID includes questions that can be used to measure actual past work experience, which may be a key factor in explaining the gender earnings difference but is not available in the CPS. We assessed the reliability of the PSID data by reviewing documentation and performing electronic tests in order to check for missing data, outliers, or other potential problems that might adversely affect our estimates. Based on these tests we determined that the data were sufficiently reliable for the purposes of our work.

In our sample, individuals between the ages of 25 and 65 were tracked from 1983 to 2000.[3] Data for some individuals were available for all of these years, while data for other individuals were available for some years only. This is because some individuals entered the sample after 1983. Individuals were not included in the sample until they formed an independent household and reached age 25. We did not use data on individuals after they reached age 65.

The dependent variable we focused on is a measure of an individual's annual earnings. As measured in the PSID, annual earnings include an individual's wages and salaries as well as income from bonuses, overtime pay, tips, commissions, and other job-related income. It also includes earnings from self-employment and farm-related income. We took inflation into account by using the consumer price index to adjust annual earnings to year 2000 dollars. We also developed an alternative definition of earnings for individuals who reported that they were "self-employed only" in a particular industry. For these individuals, we multiplied annual hours worked by the average hourly earnings for the particular industry they

[3]The lower limit of the age range was set at 25 because the PSID does not include detailed information for dependent college students, posing potential selection bias issues.

worked in using U.S. Department of Labor and U.S. Department of Agriculture data.[4]

To determine why an earnings difference between men and women may exist, our model controlled for a range of variables, which can be grouped into three variable sets. The first set of independent variables consisted of demographic characteristics, including gender, age, and race. We also included an education variable that indicated the highest number of years of education each respondent attained by the end of the sample period. Family-related demographic variables included marital status, number of children, and the age of the youngest child in the household. We also included other income (defined as family income minus a respondent's own personal earnings), the region where individuals lived (i.e., in the South or not), and whether they lived in a rural or urban area (i.e., in a metropolitan area or not).

The second set of independent variables pertained to past work experience. Total work experience was defined as the actual number of years an individual worked for money since age 18. This variable was computed as self-reported experience as reported in 1984 (or the year the individual entered the panel), augmented by hours of work divided by 2,000 in each subsequent year. We also included a variable measuring job tenure, defined as the length of time an individual had spent in his or her current job.

The third set of independent variables included labor market activity reported in a given survey year. Variables included hours worked in the past year, weeks out of the labor force in the past year, and weeks unemployed in the past year. For our analysis, we considered time spent unemployed and time out of the labor force as work "interruptions," but we did not include time off for one's own illness or a family member's illness, vacation and other time off, or time out because of strike. We also included a variable that accounted for an individual's full-time or part-time employment status, defined as the average number of hours an individual worked per week on his or her main job. Individuals were considered to have worked part-time if they worked fewer than 35 hours per week and full-time if they worked 35 hours or more per week. Other variables in this

[4]The Department of Agriculture data are from the National Agricultural Statistics Service data series "Annual All Hired Workers Wage Rates, U.S. Level" and the Department of Labor data are from the Bureau of Labor Statistics data series "Average Hourly Earnings of Production Workers."

category included the individual's industry, occupation, and an indicator of union membership. We also accounted for self-employment status, defined as whether respondents worked for someone else, for themselves, or for both themselves and someone else. Table 1 shows descriptive statistics for selected PSID data used in our analysis.

Table 1: Descriptive Statistics for Selected PSID Variables

	Men		Women	
Variable	Means (averages)	Standard deviation	Means (averages)	Standard deviation
All individuals (workers and nonworkers)				
Annual earnings (in 2000 dollars)	35,942	34,630	16,554	18,510
Age of individual (in years)	41.3	11.3	42.0	11.5
Age of youngest child (in years)	3.3	4.9	4.0	5.2
Number of children	0.9	1.2	1.1	1.2
Married (percent)	70.1	45.8	61.2	48.7
Metropolitan area of residence (percent)	64.7	48.1	67.1	47.0
Full-time main job (percent)	74.9	43.3	47.2	49.9
Time unemployed (in weeks)	1.9	7.0	1.8	6.9
Time out of the labor force (in weeks)	2.4	9.9	6.1	15.3
Annual hours worked	1,931	926	1,226	957
Job tenure (in months)	80.1	102.2	55.1	80.3
Work experience (in years)	16.8	10.2	11.2	8.4
Highest education (in years)	12.9	2.7	12.7	2.4
Number of observations	42,394		54,986	
Number of individuals	5,032		6,033	
Workers only				
Annual earnings (in 2000 dollars)	40,426	34,334	22,782	18,316
Age of individual (in years)	40.2	10.6	40.4	10.5
Age of youngest child (in years)	3.5	5.0	4.3	5.2
Number of children	1.0	1.2	1.0	1.2
Married (percent)	72.2	44.9	60.9	48.8
Metropolitan area of residence (percent)	64.5	47.8	68.1	46.6
Full-time main job (percent)	87.6	33.0	66.8	47.1
Time unemployed (in weeks)	1.8	6.4	1.9	6.7
Time out of the labor force (in weeks)	0.91	5.1	2.8	9.1
Annual hours worked	2,154	697	1,672	716
Job tenure (in months)	89.3	104.2	74.1	85.6
Work experience (in years)	16.4	9.8	12.1	8.0
Highest education (in years)	13.2	2.6	13.1	2.3
Number of observations	35,726		36,793	

	Men		Women	
Variable	Means (averages)	Standard deviation	Means (averages)	Standard deviation
Number of individuals	4,477		4,884	

Source: GAO analysis of PSID data.

Description of Our Econometric Model

We used the Hausman-Taylor model to analyze the earnings difference between men and women.[5] The Hausman-Taylor model was developed to analyze panel data and to take into account unobserved heterogeneity and endogeneity while permitting the estimation of coefficients for factors that do not vary over time, such as gender. As is usual practice in studies of the determinants of earnings and earnings differences between groups, we related the natural logarithm of the dependent variable (annual earnings in this case) to several independent variables. The specific equation we estimated was

$$\ln(\text{real earnings}_{it}) = X_{1it}\beta_1 + X_{2it}\beta_2 + Z_{1i}\delta_1 + Z_{2i}\delta_2 + \mu_i + \nu_{it}$$

where subscripts i and t denote individuals and time periods,

X_{1it} are exogenous time-varying variables assumed to be uncorrelated with μ_i and ν_{it},

X_{2it} are endogenous time-varying variables possibly correlated with μ_i but not with ν_{it},

Z_{1i} are exogenous time-invariant variables assumed to be uncorrelated with μ_i and ν_{it},

[5]Jerry A. Hausman and William E. Taylor, "Panel Data and Unobservable Individual Effects," *Econometrica* 49:6 (November 1981). Light and Ureta use this model to analyze the relationship between experience and wage differences (see Audrey Light and Manuelita Ureta, "Early-Career Work Experience and Gender Wage Differentials," *Journal of Labor Economics* 13:1 (1995): 121-154).

Z_{2i} are endogenous time-invariant variables possibly correlated with μ_i but not with ν_{it},

β and δ represent coefficients on the respective variables,

μ_i is an individual-specific random error term designed to take unobserved individual heterogeneity into account, and

ν_{it} is a random error term.

In our specification of the model, we allowed annual hours worked, time out of labor force, work experience, and the square of experience to be time-varying endogenous variables. Highest education achieved was treated as a time-invariant endogenous variable. The other independent variables were treated as exogenous.

To account for possible selection bias arising from not accounting for an individual's choice of whether to work, we used a Heckman selection bias correction. To do this, we estimated the probability of working in a particular year for all individuals in the data set.[6] We then used a term that was estimated in this equation (the inverse Mills ratio) as an additional independent variable in the Hausman-Taylor earnings equation. The Hausman-Taylor model was then estimated for individuals with positive annual hours of work and positive earnings in a given year.

Two academic labor economists reviewed a preliminary version of the econometric model and the results. One of the reviewers has published extensively on gender wage differences and has used the PSID in his work. The other reviewer has published widely on labor economics topics generally, also using the PSID. Both reviewers thought that the model and results were sound and reasonable. To the extent possible, we have incorporated their suggestions for clarifications and additional analysis.

[6]The probability that an individual worked was modeled as a function of age, the number of children and the age of the youngest child in the household, marital status, additional family income, work experience, education, race, region and urban-rural indicators, and a work disability indicator. This model was estimated separately for men and women for each of the years in the sample.

Results of Our Analysis

We found that before controlling for any variables that may affect earnings, on average, women earned about 44 percent less than men over the time period we studied—1983 to 2000. However, after controlling for the independent variables that we included in our model, we found that this difference was reduced to about 21 percent over this time period. The model results indicated a small but statistically significant decline in the earnings difference over this period.

Table 2 shows the regression results for the overall model that included observations on men and women combined and the results for men and women separately. For each variable in each regression, the table shows the coefficient (estimate β), the estimated standard error for the coefficient, the p-value, and an alternative coefficient estimate. For each of the regressions, the first column of results shows the coefficient estimates. The standard interpretation of the regression coefficients in models of this type is that they represent the average percentage change in earnings that would result from a small increase in an independent variable. The estimated standard error and the p-value are shown in the second and third columns. A p-value of less than 0.05 indicates that the regression coefficient is statistically significantly different from zero, which would indicate that the variable has a statistically significant effect on earnings. In the fourth column, we show an alternative estimate for the average percentage change based on a transformation of the regression coefficients, which the literature shows is a more precise measure than the standard coefficient estimate.[7] For this reason, we emphasize the alternative estimates in the discussion of the results.

The gender coefficient in the overall model shows the difference in earnings between men and women in each year after accounting for the effect of the other variables in the model. As shown in the alternative estimate column of the overall model results of table 2, the estimated coefficient for the gender variable was –0.2025 for the year 2000. This means that, holding all other variables in the model constant except for gender, women earned an average of about 20.3 percent less than men in 2000. The estimated coefficients were statistically significantly different from zero for each of the years. Overall, the model results indicated that there was a small but statistically significant decline in the earnings

[7]Peter E. Kennedy, "Estimation with Correctly Interpreted Dummy Variables in Semilogarithmic Equations," *American Economic Review*, 71:4 (September 1981): 801. The alternative estimator $g = \exp(\beta - \frac{1}{2} V(\beta)) - 1$, where $V(\beta)$ is the estimated variance of the regression coefficient.

difference between 1983 and 2000. The analysis indicated that the difference declined by about 0.3 percentage points per year, on average.

The next set of variables, included in the overall model and in the separate regressions for men and women, deal with work patterns. In our analysis, work patterns included years of work experience, hours worked per year, length of time out of the labor force, and whether the individual worked a full-time or part-time schedule. In addition, length of unemployment and tenure were also considered to be work patterns. For the hours worked, time out of the labor force, length of unemployment, and tenure variables, the coefficient estimate shown represents the estimated percentage change in earnings that would result from a one-unit change (hours or weeks) in the particular variable. For example, as shown in table 2 in the alternative estimate column of the overall model results, the coefficient for time out of the labor force was –0.0226. This means that earnings would decrease by about 2.3 percent for each additional week out of the labor force, holding all other factors constant—including annual hours worked. The coefficients on the experience variables indicate that each additional year of work experience is generally associated with increased earnings, but this increase declines as the level of experience increases.[8] The working full-time variable measures the effect of having a full-time main job relative to having a part-time job as a main job. All the work pattern variables are estimated to have a statistically significant effect on earnings.

The next set of variables includes other work-related characteristics. Several of these variables are categorical in nature, such as occupation, industry, and self-employment status. For these variables, the coefficient for a particular category is an estimate of the effect of being in that category relative to the omitted category. For example, as shown in table 2 in the alternative estimate column of the overall model results, the coefficient was -0.09 for those individuals working in service/private household occupations. This indicates that individuals working in service/private household occupations earned 9 percent less, on average,

[8]The effect of an additional year of experience on earnings is the sum of the effect of the experience and experience-squared variables. The amount that an additional year of experience will increase the value of the experience-squared variable will vary with the level of experience. For example, an additional year of experience would increase experience-squared by 1 for someone with no prior experience, and it will increase the experience-squared variable by 41 for someone with 20 years of experience (i.e., 441 – 400 = 41). Taking into account the effect of both variables, these estimates would indicate that an additional year of experience would increase earnings for men with less than 33 years of experience and for women with less than 31 years of experience.

than individuals working in professional and technical occupations (the omitted occupation category), holding all other variables in the model constant. On the other hand, nonfarm managers and administrators earned about 2.5 percent more, on average, than professional and technical workers, holding other factors constant.

Also shown in table 2 are coefficients for demographic variables and other independent variables that were included in the model, such as age of individual, age of youngest child, number of children, metropolitan area, marital status, and region. Several of the coefficients in this category, such as age of youngest child and number of children, were not found to be statistically significant in the overall model. However, other coefficients were statistically significant, such as age of individual, living in a metropolitan area, living in the South, being married, and being black. For example, in table 2 in the alternative estimate column of the overall model results, the coefficient for living in a metropolitan area was 0.0229. This means that individuals living in a metropolitan area were estimated to earn about 2.3 percent more than those living in non-metropolitan areas, and this difference was statistically significant. Also, according to the model, individuals living in the South were estimated to earn about 4.2 percent less than those not living in the South, and this difference was statistically significant.

Table 2 also shows the regression results of the separate analysis of men and women. Most of the variables had coefficients that were both positive or both negative for men and women, indicating that the variables affected earnings in the same direction. This is the case for all work pattern variables. For example, as shown in table 2 in the alternative estimate columns for men and women, the estimated coefficients for the work experience variable were positive for men and women (0.0264 and 0.0249 respectively) and the coefficient for the square of work experience is negative for both men and women. As discussed above, earnings for both men and women generally increase with additional experience, but that increase declines the higher the level of work experience (for example, the gain between the fifth and sixth year of work experience is larger than between the 25^{th} and 26^{th} year of work experience). Estimated coefficients for other variables were also negative for both men and women. For example, as shown in table 2 in the alternative estimate columns for men and women separately, the coefficients for black individuals (relative to white—the omitted category) were as follows: -0.1385 for men and –0.0661 for women. This means that black men earned about 13.9 percent less than white men, while black women earned about 6.6 percent less than white women.

The relationship between earnings and number of children is one example where the coefficients are not of the same sign. As shown in table 2 in the overall model results for men and women combined, the coefficient on the number of children variable was statistically insignificant. However, in the separate regression analysis of men and women, number of children was associated with about a 2.1 percent increase in earnings for men and about a 2.5 percent decrease for women, with both estimates being significant. In addition, married men earned about 8.3 percent more than never married men, while the earnings difference between married and never married women was statistically insignificant.

Table 2: Overall and Separate Model Results for Men and Women

	Overall model			
Variable	**Estimate β**	**Standard error**	**p-value**	**Alternative estimate g**
Gender: women vs. men				
2000	–0.2260	0.0227	0.000	-0.2025
1999[a]				
1998	–0.1716	0.0229	0.000	-0.1579
1997[a]				
1996	–0.2264	0.0230	0.000	-0.2028
1995	–0.2176	0.0215	0.000	-0.1958
1994	–0.2311	0.0213	0.000	-0.2065
1993	–0.2132	0.0214	0.000	-0.1922
1992	–0.2556	0.0210	0.000	-0.2257
1991	–0.2478	0.0209	0.000	-0.2197
1990	–0.2277	0.0209	0.000	-0.2038
1989	–0.2315	0.0209	0.000	-0.2068
1988	–0.2534	0.0210	0.000	-0.2240
1987	–0.2503	0.0211	0.000	-0.2216
1986	–0.2708	0.0210	0.000	-0.2374
1985	–0.2810	0.0212	0.000	-0.2452
1984	–0.2921	0.0212	0.000	-0.2534
1983	–0.2179	0.0222	0.000	-0.1960
Work patterns				
Experience (years)	0.0231	0.0019	0.000	0.0234
Experience squared	–0.0003	0.0000	0.000	-0.0003
Hours worked (per year)	0.0004	0.0000	0.000	0.0004
Time out of labor force (weeks)	-0.0228	0.0003	0.000	-0.0226
Length of unemployment (weeks)	–0.0156	0.0004	0.000	-0.0155
Tenure (months)	0.0009	0.0000	0.000	0.0009

Men				Women			
Estimate β_m	Standard error	p-value	Alternative estimate g_m	Estimate β_f	Standard error	p-value	Alternative estimate g_f
0.0260	0.0025	0.000	0.0264	0.0246	0.0031	0.000	0.0249
–0.0004	0.0000	0.000	-0.0004	–0.0004	0.0001	0.000	-0.0004
0.0003	0.0000	0.000	0.0003	0.0005	0.0000	0.000	0.0005
–0.0175	0.0006	0.000	-0.0174	–0.0224	0.0004	0.000	-0.0222
–0.0171	0.0005	0.000	-0.0170	–0.0143	0.0005	0.000	-0.0142
0.0010	0.0000	0.000	0.0010	0.0009	0.0001	0.000	0.0009

	Overall model			
Variable	Estimate β	Standard error	p-value	Alternative estimate g
Working full time (main job)	0.1519	0.0063	0.000	0.1640
Other work related				
Mother's education	–0.0194	0.0057	0.001	-0.0193
Father's education	–0.0044	0.0051	0.385	-0.0044
Highest education (years)	0.1475	0.0058	0.000	0.1590
Self-employment status				
Works for someone else only[b]				
Self-employed only	0.0142	0.0103	0.166	0.0142
Missing	–0.3272	0.0128	0.000	-0.2791
Both	0.0191	0.0239	0.424	0.0190
Union member	0.1435	0.0090	0.000	0.1542
Occupation				
Professional, technical[b]				
Service/private household workers	–0.0949	0.0116	0.000	-0.0906
Farm laborers and foremen	–0.1761	0.0399	0.000	-0.1622
Farmers and farm management	–0.3805	0.0469	0.000	-0.3172
Nonfarm laborers	–0.0907	0.0162	0.000	-0.0869
Transport equipment operators	–0.0869	0.0179	0.000	-0.0834
Operators, nontransport	–0.0588	0.0136	0.000	-0.0572
Craftsmen	–0.0108	0.0122	0.376	-0.0108

Men				Women			
Estimate β_m	Standard error	p-value	Alternative estimate g_m	Estimate β_f	Standard error	p-value	Alternative estimate g_f
0.1724	0.0094	0.000	0.1881	0.1180	0.0086	0.000	0.1252
–0.0107	0.0075	0.155	-0.0106	–0.0256	0.0081	0.001	-0.0253
0.0039	0.0067	0.557	0.0039	–0.0117	0.0071	0.102	-0.0116
0.1355	0.0072	0.000	0.1451	0.1603	0.0087	0.000	0.1738
–0.1056	0.0123	0.000	-0.1003	0.2168	0.0169	0.000	0.2419
–0.2823	0.0187	0.000	-0.2461	–0.3413	0.0175	0.000	-0.2892
0.0506	0.0266	0.057	0.0516	–0.0846	0.0443	0.056	-0.0820
0.1388	0.0113	0.000	0.1488	0.1405	0.0140	0.000	0.1507
–0.1061	0.0176	0.000	-0.1008	–0.0975	0.0158	0.000	-0.0930
–0.1928	0.0422	0.000	-0.1761	–0.0602	0.0850	0.479	-0.0618
–0.3434	0.0479	0.000	-0.2915	–0.1690	0.1156	0.144	-0.1611
–0.0823	0.0178	0.000	-0.0791	–0.0627	0.0380	0.099	-0.0615
–0.0576	0.0192	0.003	-0.0562	–0.1840	0.0468	0.000	-0.1690
–0.0458	0.0168	0.007	-0.0449	–0.0657	0.0217	0.003	-0.0638
0.0016	0.0138	0.909	0.0015	–0.0180	0.0290	0.534	-0.0183

	Overall model			
Variable	Estimate β	Standard error	p-value	Alternative estimate g
Clerical workers	–0.0438	0.0104	0.000	-0.0429
Sales workers	–0.0718	0.0145	0.000	-0.0694
Nonfarm managers, administrators	0.0243	0.0100	0.015	0.0246
Do not know/missing	–0.1329	0.0280	0.000	-0.1248
Industry				
Wholesale/retail trade[b]				
Public administration	0.0702	0.0147	0.000	0.0726
Professional services	0.0516	0.0107	0.000	0.0529
Entertainment	–0.0378	0.0275	0.168	-0.0375
Personal services	0.0172	0.0156	0.270	0.0172
Business and repair services	0.0561	0.0129	0.000	0.0576
Finance, insurance, real estate	0.1081	0.0149	0.000	0.1141
Transportation/ communications/ public utilities	0.1692	0.0145	0.000	0.1842
Manufacturing	0.1369	0.0104	0.000	0.1467
Construction	0.1472	0.0150	0.000	0.1584
Mining/agriculture	0.0303	0.0234	0.195	0.0305
Do not know/missing	0.0835	0.0251	0.001	0.0868
Mills ratio	–0.2834	0.0218	0.000	-0.2470
Demographic and other controls				
Age of individual (years)	–0.0023	0.0011	0.043	-0.0023
Age of youngest child (years)	0.0006	0.0005	0.257	0.0006

Men				Women			
Estimate β_m	Standard error	p-value	Alternative estimate g_m	Estimate β_f	Standard error	p-value	Alternative estimate g_f
–0.0608	0.0178	0.001	-0.0592	–0.0497	0.0138	0.000	-0.0486
–0.0343	0.0187	0.066	-0.0339	–0.0931	0.0218	0.000	-0.0891
0.0373	0.0125	0.003	0.0379	0.0165	0.0157	0.295	0.0165
–0.1107	0.0370	0.003	-0.1054	–0.1276	0.0414	0.002	-0.1205
0.0104	0.0183	0.571	0.0102	0.1641	0.0233	0.000	0.1780
0.0172	0.0164	0.294	0.0172	0.0707	0.0146	0.000	0.0731
0.0044	0.0337	0.896	0.0039	–0.0756	0.0436	0.083	-0.0737
–0.0307	0.0301	0.308	-0.0306	–0.0097	0.0196	0.623	-0.0098
0.0705	0.0158	0.000	0.0729	0.0488	0.0208	0.019	0.0498
0.0562	0.0219	0.010	0.0575	0.1489	0.0202	0.000	0.1604
0.1713	0.0163	0.000	0.1867	0.1865	0.0280	0.000	0.2046
0.1417	0.0126	0.000	0.1521	0.1332	0.0174	0.000	0.1423
0.1708	0.0160	0.000	0.1861	0.0673	0.0384	0.079	0.0689
0.0481	0.0247	0.051	0.0489	0.0178	0.0517	0.730	0.0166
0.1106	0.0323	0.001	0.1164	0.0712	0.0378	0.060	0.0730
–0.3307	0.0285	0.000	-0.2819	–0.1584	0.0352	0.000	-0.1470
–0.0016	0.0019	0.394	-0.0016	–0.0058	0.0015	0.000	-0.0057
–0.0013	0.0007	0.048	-0.0013	0.0023	0.0007	0.003	0.0023

	Overall model			
Variable	Estimate β	Standard error	p-value	Alternative estimate g
Number of children	0.0004	0.0029	0.897	0.0004
Additional family income (inflation adjusted in thousands of dollars)	–0.0006	0.0001	0.000	-0.0006
Metropolitan area	0.0226	0.0067	0.001	0.0229
Excellent health	0.0088	0.0057	0.123	0.0089
Marital status				
Never married[b]				
Married	0.0403	0.0113	0.000	0.0410
Other	0.0245	0.0127	0.053	0.0247
Region: South	–0.0428	0.0120	0.000	-0.0420
Race				
White[b]				
Black	–0.1031	0.0171	0.000	-0.0981
Other	0.0739	0.0585	0.207	0.0748
Year, compared to 1983				
2000	0.0410	0.0191	0.032	0.0417
1999[a]				
1998	–0.0223	0.0187	0.233	-0.0222
1997[a]				
1996	–0.0837	0.0187	0.000	-0.0804
1995	–0.0705	0.0177	0.000	-0.0682
1994	–0.0794	0.0170	0.000	-0.0764
1993	–0.0664	0.0168	0.000	-0.0643
1992	–0.0477	0.0161	0.003	-0.0467
1991	–0.0867	0.0157	0.000	-0.0832
1990	–0.0839	0.0154	0.000	-0.0806
1989	–0.0569	0.0151	0.000	-0.0555
1988	–0.0277	0.0149	0.064	-0.0274
1987	–0.0318	0.0148	0.031	-0.0314
1986	–0.0205	0.0146	0.160	-0.0204

Men				Women			
Estimate β_m	Standard error	p-value	Alternative estimate g_m	Estimate β_f	Standard error	p-value	Alternative estimate g_f
0.0210	0.0037	0.000	0.0212	–0.0254	0.0047	0.000	-0.0251
–0.0009	0.0001	0.000	-0.0009	–0.0001	0.0001	0.403	-0.0001
0.0171	0.0086	0.047	0.0173	0.0305	0.0102	0.003	0.0309
0.0149	0.0072	0.038	0.0150	0.0062	0.0088	0.483	0.0062
0.0800	0.0142	0.000	0.0831	–0.0011	0.0176	0.950	-0.0013
0.0685	0.0162	0.000	0.0707	–0.0009	0.0192	0.962	-0.0011
–0.0522	0.0155	0.001	-0.0510	–0.0377	0.0173	0.030	-0.0371
–0.1487	0.0242	0.000	-0.1385	–0.0682	0.0230	0.003	-0.0661
0.0491	0.0843	0.560	0.0466	0.0972	0.0762	0.202	0.0989
0.0188	0.0192	0.328	0.0188	0.0621	0.0222	0.005	0.0638
–0.0406	0.0186	0.029	-0.0399	0.0298	0.0215	0.165	0.0300
–0.1045	0.0185	0.000	-0.0994	–0.0733	0.0205	0.000	-0.0709
–0.0813	0.0175	0.000	-0.0782	–0.0618	0.0194	0.001	-0.0601
–0.0973	0.0167	0.000	-0.0928	–0.0759	0.0188	0.000	-0.0733
–0.0854	0.0165	0.000	-0.0820	–0.0495	0.0184	0.007	-0.0484
–0.0693	0.0156	0.000	-0.0671	–0.0625	0.0180	0.001	-0.0608
–0.1023	0.0150	0.000	-0.0974	–0.0921	0.0180	0.000	-0.0881
–0.0960	0.0146	0.000	-0.0917	–0.0737	0.0174	0.000	-0.0712
–0.0691	0.0142	0.000	-0.0669	–0.0524	0.0171	0.002	-0.0512
–0.0359	0.0140	0.010	-0.0354	–0.0516	0.0169	0.002	-0.0504
–0.0389	0.0137	0.005	-0.0383	–0.0561	0.0165	0.001	-0.0546
–0.0248	0.0135	0.066	-0.0246	–0.0632	0.0164	0.000	-0.0613

	Overall model			
Variable	Estimate β	Standard error	p-value	Alternative estimate g
1985	–0.0249	0.0145	0.086	-0.0247
1984	–0.0219	0.0144	0.127	-0.0218
Intercept	7.4055	0.0783	0.000	7.4055

Men				Women			
Estimate β_m	Standard error	p-value	Alternative estimate g_m	Estimate β_f	Standard error	p-value	Alternative estimate g_f
–0.0282	0.0134	0.035	-0.0279	–0.0822	0.0163	0.000	-0.0791
–0.0237	0.0131	0.070	-0.0235	–0.0847	0.0160	0.000	-0.0813
7.5910	0.0983	0.000	7.5910	6.9846	0.1179	0.000	6.9846

Source: GAO analysis of PSID data.

[a]Data not available.

[b]Category omitted.

Tables 3, 4, and 5 show a decomposition analysis of the earnings difference derived from the separate regression analysis for men and women. This statistical technique—the Blinder-Oaxaca decomposition—has been commonly used in analyses of wage or earnings differences between men and women. The decomposition divides the (logged) earnings difference between men and women into two parts: a part reflecting differences in characteristics between men and women and a part reflecting differences in parameters (or return to earnings) between men and women.[9] This decomposition is represented as follows:

$$\overline{\ln E_m} - \overline{\ln E_f} = (\overline{X}_m - \overline{X}_f)'\hat{\beta}_m + \overline{X}_f'(\hat{\beta}_m - \hat{\beta}_f)$$

where $\overline{X}_m$ and $\overline{X}_f$ represent the mean values of the independent variables for men and women, respectively, and β_m and β_f are the estimated regression coefficients for men and women for all the variables.

We estimated the logged earnings difference between men and women from 1983 and 2000 to be approximately 0.69 (i.e. the left hand side of the equation above). The analysis showed that about two-thirds of this difference, or 0.45 out of 0.69, reflected differences between men and women's characteristics (the first term on the right hand side of the equation). The remaining one-third, about 0.24 out of 0.69, reflected differences in parameters, i.e., how the variables affected earnings

[9]J. G. Altonji and R. M. Blank, "Race and Gender in the Labor Market," *The Handbook of Labor Economics* (Amsterdam: Elsevier Science, 1999), vol. 3C, pp. 3153–61.

differently for men and women (the second term on the right hand side of the equation).

Table 3 summarizes how several categories of variables contributed to the earnings difference through differences in characteristics and differences in parameters. Positive values indicate an earnings advantage for men while negative values indicate an advantage for women. For example, in table 3, the difference in earnings due to characteristics from the work pattern variables is equal to 0.2729, which indicates that men have an earnings advantage. This figure represents the sum—for all the work pattern variables—of the difference in men's and women's mean characteristics multiplied by the men's regression coefficients. The effect of the work pattern variables accounted for most of the difference in characteristics between men and women (due to different characteristics: about 0.27 out of 0.45). Relatively little of the earnings difference was attributable to differences in demographic characteristics (about 0.03 out of 0.45).

Table 3 also shows the differences in earnings due to differences in parameters (0.2446 in the total row at the bottom of table 3). The table shows that women have a relative advantage due to parameters from the work pattern variables. In the table, -0.2302 represents the sum—for all the work pattern variables—of the difference in men and women's parameters multiplied by the women's mean value of the variable. Women's advantages in the work pattern and other work-related variable categories are outweighed by disadvantages due to the parameters for demographic factors and from the intercept of the regressions. The relatively large advantage to men in the intercepts of the regressions indicates that a predictable earnings difference remains even after taking differences in characteristics and relative returns into account.

This second part of the decomposition allows us to describe how the remaining earnings difference results from how each factor affects earnings differently for men and women. According to Altonji and Blank, this component is often mistakenly attributed to the "share due to discrimination" but actually "captures both the effects of discrimination and unobserved differences in productivity and tastes."[10] They also point out that it may be misleading to label only this second component as the result of discrimination, since discriminatory barriers in the labor market

[10]Altonji and Blank, p. 3156.

and elsewhere in the economy can affect the mean values of the characteristics.

Table 3: Summary of Decomposition Results

	Differences in earnings	
Variable categories	**Due to characteristics**	**Due to parameters**
Work patterns[a]	0.2729	-0.2302
Other work related[b]	0.1539	-0.3218
Demographic and other controls[c]	0.0272	0.1902
Intercept	N/A	0.6065
Total	**0.4540**	**0.2446**

Source: GAO Analysis of PSID data.

Note: These summary results are based on the more detailed analysis shown in table 4.

[a]The work patterns category includes: work experience (years), experience squared, time out of the labor force (weeks), length of unemployment (weeks), working full time (main job), tenure (months), and hours worked (per year).

[b]The other work related category includes: highest education (years), mother's education, father's education, self-employment status, union membership, industry, occupation, and the Mill's ratio.

[c]The demographic and other controls category includes all other variables, except the intercept, which is a parameter only.

Table 4 shows more detailed decomposition results.[11] In table 4 in the column labeled difference due to characteristics, the variables measuring work patterns, including experience (0.108), hours worked (0.134), working full-time versus part-time (0.036), and length of time out of the labor force (0.034), made large contributions to explaining gender differences in earnings. Table 4 shows that, on average, men in our sample worked about 2,147 hours per year, women about 1,675 hours per year. The analysis showed that the difference between men and women, based on hours worked, resulted in a relative advantage for men of about 0.134. In other words, about one-fifth of the uncontrolled logged earnings difference (0.134 out of 0.69) results from the greater number of hours men worked compared to women.

[11]Table 5 uses the alternative estimates reported in table 2. Because the alternative estimates are a transformation of the regression coefficients, the sum of the differences due to characteristics and parameters need not sum to the total difference in logged earnings as it does in the standard decomposition.

Table 4 also shows how the variables affected earnings differently for men and women. Positive values in the difference due to parameters column would indicate that men would gain more from an increase in a particular variable than would women. For example, compared to women, men receive a greater estimated return to their earnings resulting from having children. However, we found several large negative values indicating that women have a relative advantage over men in terms of how other factors affect earnings. The largest negative values in this column resulted from the greater estimated return for each additional year of education and the greater estimated return for an additional hour of work for women. As mentioned above, the relative advantage for women for some of the variables in the model is offset when the difference in the intercept terms of the separate regressions is added. The difference in the intercept terms captures gender differences and other unmeasured effects that we cannot identify in the regressions.[12]

Table 4: Decomposition Results Using Regression Coefficients

	Estimate		Means (averages)		Difference			
Variable	Men β_m	Women β_f	Men X_m	Women X_f	Between means (averages) $(X_m - X_f)$	Due to characteristics $(X_m - X_f)\ \beta_m$	Between parameters $(\beta_m - \beta_f)$	Due to parameters (returns) $X_f\ (\beta_m - \beta_f)$
Work patterns								
Experience (years)	0.0260	0.0246	16.2891	12.1342	4.1548	0.1081	0.0014	0.0170
Experience squared	–0.0004	–0.0004	359.5914	210.6411	148.9504	–0.0558	0.0001	0.0120
Hours worked (per year)	0.0003	0.0005	2,147.3100	1,674.8000	472.5100	0.1340	-0.0002	-0.3057
Time out of labor force (weeks)	–0.0175	–0.0224	0.9262	2.8345	–1.9083	0.0335	0.0049	0.0139
Length of unemployment (weeks)	–0.0171	–0.0143	1.8149	1.8887	–0.0739	0.0013	-0.0028	-0.0054
Tenure (months)	0.0010	0.0009	91.4775	74.4278	17.0497	0.0163	0.0000	0.0015
Working full time (in main job)	0.1724	0.1180	0.8761	0.6701	0.2059	0.0355	0.0543	0.0364

[12]Oaxaca and Ransom showed that the size of the intercept terms in decompositions is sensitive to the choice of the omitted categorical variables used as reference groups in the analysis. See Ronald L. Oaxaca and Michael R. Ransom, "Identification in Detailed Wage Decompositions," *Review of Economics and Statistics* 81:1(February 1999): 154–57.

Variable	Estimate		Means (averages)		Difference			
	Men β_m	Women β_f	Men X_m	Women X_f	Between means (averages) $(X_m - X_f)$	Due to characteristics $(X_m - X_f)\ \beta_m$	Between parameters $(\beta_m - \beta_f)$	Due to parameters (returns) $X_f\ (\beta_m - \beta_f)$
Other work related								
Mother's education	–0.0107	–0.0256	3.5458	3.4941	0.0516	–0.0005	0.0150	0.0524
Father's education	0.0039	–0.0117	3.3364	3.2447	0.0917	0.0004	0.0156	0.0506
Highest education (years)	0.1355	0.1603	13.1455	13.0880	0.0575	0.0078	–0.0248	-0.3242
Self-employment status								
Works for someone else only[a]								
Self-employed only	–0.1056	0.2168	0.1177	0.0579	0.0597	–0.0063	–0.3224	-0.0187
Missing	–0.2823	–0.3413	0.0648	0.1230	–0.0582	0.0164	0.0590	0.0073
Both	0.0506	–0.0846	0.0094	0.0042	0.0052	0.0003	0.1352	0.0006
Union member	0.1388	0.1405	0.1773	0.1187	0.0587	0.0081	–0.0017	-0.0002
Occupation								
Professional, technical[a]								
Service/private household workers	–0.1061	–0.0975	0.0763	0.2034	–0.1271	0.0135	–0.0087	-0.0018
Farm laborers and foremen	–0.1928	–0.0602	0.0121	0.0023	0.0098	–0.0019	–0.1326	-0.0003
Farmers and farm management	–0.3434	–0.1690	0.0124	0.0008	0.0116	–0.0040	–0.1745	-0.0001
Nonfarm laborers	–0.0823	–0.0627	0.0547	0.0083	0.0464	–0.0038	–0.0195	-0.0002
Transport equipment operators	–0.0576	–0.1840	0.0680	0.0084	0.0596	–0.0034	0.1264	0.0011
Operators, nontransport	–0.0458	–0.0657	0.0877	0.0879	–0.0002	0.0000	0.0198	0.0017
Craftsmen	0.0016	–0.0180	0.2049	0.0171	0.1879	0.0003	0.0196	0.0003
Clerical workers	–0.0608	–0.0497	0.0497	0.2565	–0.2068	0.0126	–0.0111	-0.0028
Sales workers	–0.0343	–0.0931	0.0469	0.0409	0.0059	–0.0002	0.0588	0.0024
Nonfarm managers, administrators	0.0373	0.0165	0.1609	0.0922	0.0687	0.0026	0.0208	0.0019
Do not know/missing	–0.1107	–0.1276	0.0468	0.0906	–0.0439	0.0049	0.0169	0.0015

Variable	Estimate		Means (averages)		Difference			
	Men β_m	Women β_f	Men X_m	Women X_f	Between means (averages) $(X_m - X_f)$	Due to characteristics $(X_m - X_f)\ \beta_m$	Between parameters $(\beta_m - \beta_f)$	Due to parameters (returns) $X_f\ (\beta_m - \beta_f)$
Industry								
Wholesale/retail trade[a]								
Public administration	0.0104	0.1641	0.0799	0.0607	0.0192	0.0002	–0.1538	-0.0093
Professional services	0.0172	0.0707	0.1211	0.3467	–0.2256	–0.0039	–0.0535	-0.0186
Entertainment	0.0044	–0.0756	0.0095	0.0061	0.0034	0.0000	0.0800	0.0005
Personal services	–0.0307	–0.0097	0.0130	0.0678	–0.0549	0.0017	–0.0210	-0.0014
Business and repair services	0.0705	0.0488	0.0585	0.0340	0.0245	0.0017	0.0217	0.0007
Finance, insurance, real estate	0.0562	0.1489	0.0394	0.0641	–0.0248	–0.0014	–0.0928	-0.0059
Transportation/ communications/ public utilities	0.1713	0.1865	0.0976	0.0353	0.0622	0.0107	–0.0152	-0.0005
Manufacturing	0.1417	0.1332	0.2444	0.1341	0.1103	0.0156	0.0085	0.0011
Construction	0.1708	0.0673	0.0963	0.0101	0.0862	0.0147	0.1034	0.0010
Mining/agriculture	0.0481	0.0178	0.0474	0.0075	0.0399	0.0019	0.0302	0.0002
Do not know/missing	0.1106	0.0712	0.0513	0.0954	–0.0441	–0.0049	0.0394	0.0038
Mills ratio	–0.3307	–0.1584	0.1628	0.3771	–0.2143	0.0709	–0.1723	-0.0650
Demographic and other controls								
Age of individual (years)	–0.0016	–0.0058	40.1442	40.3309	–0.1867	0.0003	0.0041	0.1669
Age of youngest child (years)	–0.0013	0.0023	3.4902	4.2042	–0.7140	0.0010	–0.0036	-0.0152
Number of children	0.0210	–0.0254	0.9659	1.0469	–0.0810	–0.0017	0.0464	0.0486
Additional family income (inflation adjusted in thousands of dollars)	–0.0009	–0.0001	25.1172	34.9156	–9.7984	0.0086	–0.0008	-0.0284
Metropolitan area	0.0171	0.0305	0.6476	0.6806	–0.0330	–0.0006	–0.0133	-0.0091
Excellent health	0.0149	0.0062	0.2613	0.2041	0.0572	0.0009	0.0088	0.0018
Marital status								
Never married[a]								
Married	0.0800	–0.0011	0.7196	0.6101	0.1095	0.0088	0.0811	0.0495

	Estimate		Means (averages)		Difference			
Variable	Men β_m	Women β_f	Men X_m	Women X_f	Between means (averages) $(X_m - X_f)$	Due to characteristics $(X_m - X_f)\ \beta_m$	Between parameters $(\beta_m - \beta_f)$	Due to parameters (returns) $X_f\ (\beta_m - \beta_f)$
Other	0.0685	–0.0009	0.1327	0.2424	–0.1097	–0.0075	0.0694	0.0168
Region: South	–0.0522	–0.0377	0.4142	0.4551	–0.0409	0.0021	–0.0145	-0.0066
Race								
White[a]								
Black	–0.1487	–0.0682	0.2666	0.3602	–0.0936	0.0139	–0.0806	-0.0290
Other	0.0491	0.0972	0.0140	0.0152	–0.0011	–0.0001	–0.0481	-0.0007
Year, compared to 1983								
2000	0.0188	0.0621	0.0537	0.0538	–0.0001	–0.0000	–0.0433	-0.0023
1999[b]								
1998	–0.0406	0.0298	0.0536	0.0515	0.0021	–0.0001	–0.0704	-0.0036
1997[b]								
1996	–0.1045	–0.0733	0.0468	0.0514	–0.0046	0.0005	–0.0312	-0.0016
1995	–0.0813	–0.0618	0.0613	0.0622	–0.0009	0.0001	–0.0194	-0.0012
1994	–0.0973	–0.0759	0.0615	0.0655	–0.0040	0.0004	–0.0214	-0.0014
1993	–0.0854	–0.0495	0.0597	0.0641	–0.0044	0.0004	–0.0359	-0.0023
1992	–0.0693	–0.0625	0.0662	0.0684	–0.0022	0.0002	–0.0068	-0.0005
1991	–0.1023	–0.0921	0.0668	0.0675	–0.0007	0.0001	–0.0103	-0.0007
1990	–0.0960	–0.0737	0.0672	0.0686	–0.0015	0.0001	–0.0224	-0.0015
1989	–0.0691	–0.0524	0.0675	0.0680	–0.0006	0.0000	–0.0167	-0.0011
1988	–0.0359	–0.0516	0.0669	0.0667	0.0002	–0.0000	0.0157	0.0010
1987	–0.0389	–0.0561	0.0666	0.0660	0.0006	–0.0000	0.0171	0.0011
1986	–0.0248	–0.0632	0.0668	0.0654	0.0014	–0.0000	0.0384	0.0025
1985	–0.0282	–0.0822	0.0666	0.0646	0.0020	–0.0001	0.0540	0.0035
1984	–0.0237	–0.0847	0.0656	0.0631	0.0025	–0.0001	0.0609	0.0038
Sum before intercept								-0.3618
Intercept	7.5910	6.9846						0.6065
Sum						0.4540		0.2446

Source: GAO analysis of PSID data.

[a]Category omitted.

[b]No data available.

Table 5: Decomposition Results Using Alternative Estimates

Variable	Alternative estimate		Means (averages)		Difference			
	Men g_m	Women g_f	Men X_m	Women X_f	Between means (averages) $(X_m - X_f)$	Due to characteristics $(X_m - X_f)\, g_m$	Between parameters $(g_m - g_f)$	Due to parameters (returns) $X_f(g_m - g_f)$
Work Patterns								
Experience (years)	0.0264	0.0249	16.2891	12.1342	4.1548	0.1095	0.0014	0.0175
Experience squared	–0.0004	–0.0004	359.5914	210.6411	148.9504	–0.0558	0.0001	0.0120
Hours worked (per year)	0.0003	0.0005	2,147.3100	1,674.8000	472.5100	0.1340	–0.0002	-0.3058
Time out of labor force (weeks)	–0.0174	–0.0222	0.9262	2.8345	–1.9083	0.0332	0.0048	0.0136
Length of unemployment (weeks)	–0.0170	–0.0142	1.8149	1.8887	–0.0739	0.0013	–0.0028	-0.0053
Tenure (months)	0.0010	0.0009	91.4775	74.4278	17.0497	0.0163	0.0000	0.0015
Working full time (in main job)	0.1881	0.1252	0.8761	0.6701	0.2059	0.0387	0.0628	0.0421
Other work related								
Mother's education	–0.0106	–0.0253	3.5458	3.4941	0.0516	–0.0005	0.0147	0.0515
Father's education	0.0039	–0.0116	3.3364	3.2447	0.0917	0.0004	0.0155	0.0504
Highest education (years)	0.1451	0.1738	13.1455	13.0880	0.0575	0.0083	–0.0287	-0.3757
Self-employment status								
Works for someone else only[a]								
Self-employed only	–0.1003	0.2419	0.1177	0.0579	0.0597	–0.0060	–0.3422	-0.0198
Missing	–0.2461	–0.2892	0.0648	0.1230	-0.0582	0.0143	0.0432	0.0053
Both	0.0516	–0.0820	0.0094	0.0042	0.0052	0.0003	0.1336	0.0006
Union member	0.1488	0.1507	0.1773	0.1187	0.0587	0.0087	–0.0019	-0.0002
Occupation								
Professional, technical[a]								
Service/private household workers	–0.1008	–0.0930	0.0763	0.2034	–0.1271	0.0128	–0.0079	-0.0016

Variable	Alternative estimate		Means (averages)		Difference			
	Men g_m	Women g_f	Men X_m	Women X_f	Between means (averages) $(X_m - X_f)$	Due to characteristics $(X_m - X_f)\, g_m$	Between parameters $(g_m - g_f)$	Due to parameters (returns) $X_f (g_m - g_f)$
Farm laborers and foremen	–0.1761	–0.0618	0.0121	0.0023	0.0098	–0.0017	–0.1143	-0.0003
Farmers and farm management	–0.2915	–0.1611	0.0124	0.0008	0.0116	–0.0034	–0.1304	-0.0001
Nonfarm laborers	–0.0791	–0.0615	0.0547	0.0083	0.0464	–0.0037	–0.0176	-0.0001
Transport equipment operators	–0.0562	–0.1690	0.0680	0.0084	0.0596	–0.0033	0.1128	0.0009
Operators, nontransport	–0.0449	–0.0638	0.0877	0.0879	–0.0002	0.0000	0.0188	0.0017
Craftsmen	0.0015	–0.0183	0.2049	0.0171	0.1879	0.0003	0.0198	0.0003
Clerical workers	–0.0592	–0.0486	0.0497	0.2565	–0.2068	0.0122	–0.0106	-0.0027
Sales workers	–0.0339	–0.0891	0.0469	0.0409	0.0059	–0.0002	0.0552	0.0023
Nonfarm managers, administrators	0.0379	0.0165	0.1609	0.0922	0.0687	0.0026	0.0214	0.0020
Do not know/missing	–0.1054	–0.1205	0.0468	0.0906	–0.0439	0.0046	0.0151	0.0014
Industry								
Wholesale/retail trade[a]								
Public administration	0.0102	0.1780	0.0799	0.0607	0.0192	0.0002	–0.1678	-0.0102
Professional services	0.0172	0.0731	0.1211	0.3467	–0.2256	–0.0039	–0.0560	-0.0194
Entertainment	0.0039	–0.0737	0.0095	0.0061	0.0034	0.0000	0.0775	0.0005
Personal services	–0.0306	–0.0098	0.0130	0.0678	–0.0549	0.0017	–0.0208	-0.0014
Business and repair services	0.0729	0.0498	0.0585	0.0340	0.0245	0.0018	0.0231	0.0008
Finance, insurance, real estate	0.0575	0.1604	0.0394	0.0641	–0.0248	–0.0014	–0.1028	-0.0066
Transportation/ communication/ public utilities	0.1867	0.2046	0.0976	0.0353	0.0622	0.0116	-0.0178	-0.0006
Manufacturing	0.1521	0.1423	0.2444	0.1341	0.1103	0.0168	0.0098	0.0013

Variable	Alternative estimate		Means (averages)		Difference			
	Men g_m	Women g_f	Men X_m	Women X_f	Between means (averages) $(X_m - X_f)$	Due to characteristics $(X_m - X_f)\, g_m$	Between parameters $(g_m - g_f)$	Due to parameters (returns) $X_f (g_m - g_f)$
Construction	0.1861	0.0689	0.0963	0.0101	0.0862	0.0160	0.1172	0.0012
Mining/ agriculture	0.0489	0.0166	0.0474	0.0075	0.0399	0.0020	0.0323	0.0002
Do not know/missing	0.1164	0.0730	0.0513	0.0954	–0.0441	–0.0051	0.0434	0.0041
Mills ratio	–0.2819	–0.1470	0.1628	0.3771	–0.2143	0.0604	–0.1348	-0.0508
Demographic and other controls								
Age of individual (years)	–0.0016	–0.0057	40.1442	40.3309	–0.1867	0.0003	0.0041	0.1662
Age of youngest child (years)	–0.0013	0.0023	3.4902	4.2042	–0.7140	0.0010	–0.0036	-0.0152
Number of children	0.0212	–0.0251	0.9659	1.0469	–0.0810	–0.0017	0.0463	0.0485
Additional family income (inflation adjusted in thousands of dollars)	–0.0009	-0.0001	25.1172	34.9156	–9.7984	0.0086	–0.0008	-0.0284
Metropolitan area	0.0173	0.0309	0.6476	0.6806	–0.0330	–0.0006	–0.0136	-0.0093
Excellent health	0.0150	0.0062	0.2613	0.2041	0.0572	0.0009	0.0089	0.0018
Marital status								
Never married[a]								
Married	0.0831	–0.0013	0.7196	0.6101	–0.1097	–0.0091	0.0844	0.0515
Other	0.0707	–0.0011	0.1327	0.2424	0.0000	0.0000	0.0718	0.0174
Region: South	–0.0510	–0.0371	0.4142	0.4551	0.1095	–0.0056	–0.0139	-0.0063
Race								
White[a]								
Black	–0.1385	–0.0661	0.2666	0.3602	–0.0936	0.0130	–0.0723	-0.0260
Other	0.0466	0.0989	0.0140	0.0152	–0.0011	–0.0001	–0.0523	-0.0008
Year, compared to 1983								
2000	0.0188	0.0638	0.0537	0.0538	–0.0001	0.0000	–0.0450	-0.0024
1999[b]								
1998	–0.0399	0.0300	0.0536	0.0515	0.0021	–0.0001	–0.0699	-0.0036
1997[b]								
1996	–0.0994	–0.0709	0.0468	0.0514	–0.0046	0.0005	–0.0285	-0.0015

Variable	Alternative estimate		Means (averages)		Difference			
	Men g_m	Women g_f	Men X_m	Women X_f	Between means (averages) $(X_m - X_f)$	Due to characteristics $(X_m - X_f)\, g_m$	Between parameters $(g_m - g_f)$	Due to parameters (returns) $X_f (g_m - g_f)$
1995	–0.0782	–0.0601	0.0613	0.0622	–0.0009	0.0001	–0.0181	-0.0011
1994	–0.0928	–0.0733	0.0615	0.0655	–0.0040	0.0004	–0.0196	-0.0013
1993	–0.0820	–0.0484	0.0597	0.0641	–0.0044	0.0004	–0.0335	-0.0021
1992	–0.0671	–0.0608	0.0662	0.0684	–0.0022	0.0002	–0.0063	-0.0004
1991	–0.0974	–0.0881	0.0668	0.0675	–0.0007	0.0001	–0.0093	-0.0006
1990	–0.0917	–0.0712	0.0672	0.0686	–0.0015	0.0001	–0.0205	-0.0014
1989	–0.0669	–0.0512	0.0675	0.0680	–0.0006	0.0000	–0.0157	-0.0011
1988	–0.0354	–0.0504	0.0669	0.0667	0.0002	–0.0000	0.0151	0.0010
1987	–0.0383	–0.0546	0.0666	0.0660	0.0006	–0.0000	0.0164	0.0011
1986	–0.0246	–0.0613	0.0668	0.0654	0.0014	–0.0000	0.0368	0.0024
1985	–0.0279	–0.0791	0.0666	0.0646	0.0020	–0.0001	0.0512	0.0033
1984	–0.0235	–0.0813	0.0656	0.0631	0.0025	–0.0001	0.0578	0.0036
Sum before intercept								-0.3943
Intercept	7.5910	6.9846						0.6065
Sum[c]						0.4311		0.2122

Source: GAO analysis of PSID data.

[a]Category omitted.

[b]No data available.

[c]Sum need not equal the log difference in earnings due to the transformation of the coefficients.

To determine whether our results would change significantly if the model were specified slightly differently, we changed the specification in several ways and compared those results with the results in the report. In all the alternative specifications we developed, work patterns were important in accounting for some of the earnings difference between men and women. In addition, a significant gender earnings difference remained after controlling for the effects of the variables in the model.

We developed several different specifications of the Hausman-Taylor model presented in the report. In one particular alternative, we used a linear time trend and the national unemployment rate instead of the year specific dummy variables to control for the effects of national economic conditions and other year-specific effects that are not reflected in the other variables in the model. The results of this alternative specification

also showed a slight narrowing of the earnings difference over time, but they showed a decline in the difference in 1998 and 2000. We chose to report the specification using dummy variables for each year because it is more general than a linear time trend specification. However, this shows that the results for certain years may be sensitive to the exact specification chosen.

In other variants of the Hausman-Taylor model, we excluded occupation and industry variables from the model, excluded observations from self-employed individuals, limited the analysis to the Survey Research Center portion of the PSID, and dropped the selection bias correction term from the analysis. In these cases, the average earnings difference increased by about 1 to 5 percentage points. As in the results we report, we found a small downward trend in the difference in each case.

We also computed OLS regressions by year, using the same variables as in the model we report. The earnings difference was smaller than the results shown in table 2 (averaging about 14 percent over the period), and there was a small downward trend in the difference over time.

Limitations of Our Analysis

While our analysis used what we consider to be the most appropriate methods and data set available for our purposes, our analysis has both data and methodological limitations that should be noted. Specifically, although the PSID has many advantages over alternative data sets, like any data set, it did not include certain data elements that would have allowed us to further define reasons for earnings differences. For example, until recently, the PSID did not contain data on fringe benefits—most importantly, health insurance and pension coverage. Because data on fringe benefits were not available for each year that we studied, we did not include it for any year. If more women than men worked in jobs that offered a greater percentage of total compensation in the form of fringe benefits, part of the remaining gender earnings difference could be explained by differences in the receipt of fringe benefits. Similarly, the PSID does not contain data on job characteristics such as flexibility that men and women may value differently.

In addition, the PSID does not contain data on education quality or field of study, such as college major. It also does not contain data on cognitive ability or measures of social skills, all of which may affect earnings. For

example, studies of earnings differences that used the National Longitudinal Survey of Youth have used a measure of ability in addition to work experience, education, and demographic variables.[13] This data set, however, follows a specific cohort of individuals over time and is therefore not representative of the population as a whole.

Our model is also limited in that the industry and occupation categories that we used are broad. Gender earnings differences within these categories are not reflected and could account for some amount of the remaining difference. In addition, we did not explicitly model an individual's choice of occupation and industry and how these choices relate to earnings differences. Also, although PSID collects information on work interruptions, the detail of some of the survey questions limited our ability to fully explore reasons why individuals were out of the labor force.

We used dummy variables for years to control for general economic conditions and year-specific effects. In some specifications of the model, we added national unemployment rate data to the PSID sample in order to control for national labor market conditions. We did not access the PSID Geocode Match file, which contains more detailed information on the location of residence of survey respondents. We could not, therefore, incorporate a measure of local unemployment rates in the analyses.

[13]See Altonji and Blank, pp. 3160–62, and June O'Neill, "The Gender Gap in Wages, circa 2000," *American Economic Review* 93:2 (May 2003): 309-314

Appendix III: GAO Analysis of Women's Workplace Decisions

Purpose

Our analysis of data from the PSID identified factors that contribute to the earnings difference between men and women, but cannot fully explain the underlying reasons why these factors differ. For example, the model results indicated that earnings differ, in part, because men and women tend to have different work patterns (such as women are more likely to work part time) and often work in different occupations. However, the model could not explain why women worked part time more often or took jobs in certain occupations. In addition, the analysis could not explain why a remaining earnings difference existed after accounting for a range of demographic, family, and work-related factors. To gain perspective on these issues, we conducted additional work to gather information on why individuals make certain decisions about work and how those decisions may affect their earnings.

Scope and Methodology

We conducted a multipronged effort, including a literature review, interviews with employers as well as individuals with expertise on earnings and other workplace issues,[1] and a review of our work by additional knowledgeable individuals. Specifically, we reviewed literature on work-related decisions, including using alternative work arrangements, and how these decisions may affect advancement or earnings. We also conducted 10 interviews with a variety of experts—industry groups, advocacy groups, unions, and researchers—to obtain a broad range of perspectives on reasons why workers make certain career and workplace decisions that could affect their earnings. In selecting experts, we targeted those who have conducted research on earnings issues and have different viewpoints.

We also interviewed employers from eight companies, as well as a group of employees from one of these companies, about policies and practices, including alternative work arrangements (such as part time and leave), that may affect workers' workplace decisions and earnings. We targeted companies that are recognized leaders in work-life practices; for example, those on *Working Mother* magazine's "100 Best Companies for Working Mothers" and on *Fortune* magazine's "100 Best Companies to Work For" list. In our selection, we also sought participation from a variety of sectors, including:

- financial/professional services

[1]These individuals will be referred to as "experts" throughout this appendix.

- health care
- information technology
- manufacturing
- media/advertising
- pharmaceuticals/biotechnology
- travel/hospitality

Based on the literature and our interviews, we developed key themes about workplace culture, decisions about work, and how these decisions may affect career advancement and earnings. We vetted the themes with 11 experts—who are well known in the area of earnings and work-life issues and represent views of researchers, advocacy groups, and employers—to determine if the themes were consistent with their experience or existing research and to identify areas of disagreement to broaden our understanding of the issues.

Summary of Results

According to experts and the literature, women are more likely than men to have primary responsibility for family, and as a result, working women with family responsibilities must make a variety of decisions to manage these responsibilities. For example, these decisions may include what types of jobs women choose as well as decisions they make about how, when, and where they do their work. These decisions may have specific consequences for their career advancement or earnings. However, debate exists whether these decisions are freely made or influenced by discrimination in society or in the workplace.

Background

The tremendous growth in the number of women in the labor force in recent decades has dramatically changed the world of work. The number of women—particularly married women with children—who work has increased, in many cases leaving no one at home to handle family and other responsibilities. Single-headed households, in which only one parent is available to handle both work and home responsibilities, are also increasingly common. As a result, an increasing number of workers face the challenge of trying to simultaneously manage responsibilities both inside and outside the workplace.

At the same time, however, many employers continue to have certain expectations about how much priority workers should give to work in relation to responsibilities outside the workplace. While workplace culture varies from one workplace to another, research indicates that in some cases an "ideal worker" perception exists. According to this perception, an

ideal worker places highest priority on work, working a full-time 9-to-5 schedule throughout their working years, and often working overtime. Ideal workers take little or no time off for childbearing or childrearing, and they appear—whether true or not—to have few responsibilities outside of work. While this perception applies to all workers, most experts and literature agree that it disproportionately affects women because they often have or take primary responsibility for home and family, such as caring for children, even when they are employed outside of the home. However, some research indicates that men are now more likely than in the past to participate in childcare, eldercare, and housework and are beginning to adjust their work in response to family obligations.

Some employers, however, have taken note of the multiple needs of workers and have begun to offer alternative work arrangements to help workers manage both work and other life responsibilities. These arrangements can benefit workers by providing them with flexibility in how, when, and where they do their work. One type of alternative work arrangement allows workers to reduce their work hours from the traditional 40 hours per week, such as part-time work or job sharing.[2] Similarly, some employers offer workers the opportunity to take leave from work for a variety of reasons, such as childbirth, care for elderly relatives, or other personal reasons. Some arrangements, such as flextime, allow employees to begin and end their workday outside the traditional 9-to-5 work hours. Other arrangements, such as telecommuting from home, allow employees to work in an alternative location. Childcare facilities are also available at some workplaces to help workers with their caregiving responsibilities. In addition to benefiting workers, these arrangements may also benefit employers by helping them recruit and retain workers. For example, according to an industry group for attorneys, law firms may lose new attorneys—particularly women who plan to have children—if they do not offer workplace flexibility. This is costly to firms due to substantial training investments they make in new attorneys, which they may not recoup if workers quit early on.

Nonetheless, research suggests that many workplaces still maintain the same policies, practices, and structures that existed when most workers

[2]Part-time work schedules allow employees to reduce their work hours from the traditional 40 hours per week in exchange for a reduced salary and possibly pro-rated benefits. Job sharing—a form of part-time work—allows two employees to share job responsibilities, salary, and benefits of one full-time position.

were men who worked full time, 40-hours per week. As a result, there may be a "mismatch" between the needs of workers with family responsibilities and the structure of the workplace.

Working Women Make a Variety of Decisions to Manage Work and Family Responsibilities

Working women make a variety of decisions to manage both their work and home or family responsibilities. According to some experts and literature, some women work in jobs that are more compatible with their home and family responsibilities. In addition, some women use alternative work arrangements such as working a part-time schedule or taking leave from work. Experts indicate that these decisions may result in women as a group earning less than men. However, debate exists about whether women's work-related decisions are freely made or influenced by discrimination. Some experts believe that women and men generally have different life priorities—women choose to place higher priority on home and family, while men choose to place higher priority on career and earnings. These women may voluntarily give up potential for higher earnings to focus on home and family. However, other experts believe that men and women have similar life priorities, and instead indicate that women as a group earn less because of underlying discrimination in society or in the workplace.

Certain Jobs May Offer Flexibility but May Also Affect Earnings

According to some experts and literature, some women choose to work in jobs that are compatible with their home or family responsibilities, and may trade off career advancement or higher earnings for these jobs. Some experts and literature indicate that jobs that offer flexibility tend to be lower paying and offer less career advancement.[3]

Women choose jobs with different kinds of flexibility based on their needs. According to some researchers, some jobs are less demanding or less stressful than others, which may allow women who choose these jobs to have more time and energy for responsibilities outside of work. For example, a woman may work in an off-line, staff position, such as a human resources job, because it requires less travel and less time in the office than an online position in the company. Off-line positions may offer flexibility, but less opportunity for advancement and higher earnings. One expert also indicated that, within a certain field, some women are more

[3]In contrast, other experts indicate that flexibility is often available in higher paying jobs, particularly those where workers have more authority and autonomy.

likely to choose jobs that allow them more flexibility but lower earnings potential. For example, according to this expert, within the medical field, the family practice specialty is typically more accommodating to home and family responsibilities than the surgical specialty, which offers relatively higher earnings. Surgeons' work is generally less predictable because surgeons are often called in the middle of the night to treat emergencies. The work is also less flexible because surgeons tend to see the same patients throughout their treatment, while family practice doctors can rely on other doctors in the practice to treat their patients if necessary. Experts also noted that some women may start their own businesses, in part, to gain flexibility in when and where they work.

According to some experts and literature, women may choose jobs that allow them to quit (for example, to care for a child) and easily reenter the labor force with minimal earnings loss when they return to work. Given that job skills affect earnings, some suggest that certain women may choose jobs in which skills deteriorate or become outdated less quickly. As a result, this may allow women to leave and return to work while minimizing any effect on their earnings.

Alternative Work Arrangements Offer Flexibility but Some May Affect Earnings

Another way that women manage work and family responsibilities is by choosing to use alternative work arrangements, which may affect their career advancement and earnings.[4] For example, some women choose to work a part-time schedule, take leave from work, or use flextime. While some research indicates that certain arrangements may help women maintain their careers during times when they need flexibility, other research suggests that there may be negative effects.

No single, national data source exists that provides information about all workers who use alternative work arrangements. However, some data exist from narrowly scoped studies that focus on particular types of work arrangements, types of employees, or individual companies. Even when employers offer alternative arrangements to all workers, some research and the companies we interviewed indicate that women are more likely than men to use certain arrangements, while both men and women use others in similar proportions. Specifically, women are more likely than men to take leave from work for family reasons and to work part time for

[4]Since women are more likely than men to use certain alternative work arrangements, any effects apply disproportionately to women in these cases.

family reasons even when these options are available to both men and women. According to our interviews and some literature, some workers—particularly men—are reluctant to use alternative arrangements because they perceive that their advancement and earnings will be negatively affected. This may help to explain why men tend to use personal days, sick days, or vacation time instead of taking family leave. On the other hand, similar proportions of men and women use flextime and telecommuting when these options are available. However, according to some research, men are more likely than women to work in the jobs, organizations, or high-level, high-paying positions that have these options available.

Comprehensive, national data are lacking on how career advancement and earnings may be affected by using alternative work arrangements, but some limited research does exist. Certain researchers indicate that using certain work arrangements may have some beneficial career effects if they help workers maintain career linkages or skills that they might otherwise lose. For example, for women who would have left the workforce or changed jobs if they did not have access to alternative arrangements that could help them manage work and family, part-time work[5] may allow them to maintain job skills, knowledge, or career momentum. In addition, women who can take leave with the guarantee of returning to a similar job benefit because they maintain links with an employer where they have built up specific job-related skills.

Other research indicates that using certain alternative work arrangements may have negative effects on career advancement and earnings. Specifically, employers may view these workers as not conforming to the ideal worker norm because they are not at work as much or during the same work hours as their managers or co-workers. Research indicates that some arrangements, such as leave, part-time work, and telecommuting, reduce workers' "face time"—the amount of time spent in the workplace.[6] Given that some employers use face time as an indicator of workers' productivity, those who lack face time may experience negative career effects. According to some experts and literature, some employers may

[5]Research indicates that different types of part-time work exist. Some part-time jobs require relatively low skills, and offer low pay and little opportunity for advancement. In contrast, other part-time jobs are work schedules that employers create to retain or attract workers who cannot or do not want to work full time. These jobs are often higher skilled and higher paying with advancement potential.

[6]The idea of "face time" may apply primarily to certain types of jobs, such as professional, white-collar jobs or those that require contact with clients or customers.

view women who use alternative arrangements as less available, less valuable, or less committed to their work. This may result in less challenging work, fewer career opportunities, fewer promotions, and less pay. However, one company representative that we interviewed told us that workers using these arrangements are not necessarily less committed and that, in some cases, they work harder. For example, several of the women we interviewed who were scheduled to work less than full time noted that they sometimes came into the office or worked at home on their scheduled days off.

Although existing research is limited and often narrow in scope, following are examples of studies that address advancement and earnings effects that are associated with using certain alternative arrangements.

- One study—which tracked a small group of working women for 7 years after they gave birth—found that flextime, telecommuting, and reduced work hours had some negative impact on wage growth for some mothers. Flextime showed a neutral or mild impact on wage growth, while telecommuting and reduced work hours—which result in less face time—showed large pronounced negative effects, but only for some workers. For all three arrangements, managers or professionals experienced more negative wage effects than nonmanagerial or nonprofessional workers.

- Another study of 11,815 managers in a large financial services organization found that leaves of absence were associated with fewer subsequent promotions and smaller raises. This was true regardless of the reason for the leave (i.e., a worker's illness or family responsibilities) or whether the leave taker was a man or woman—though most of the managers taking leave were women. Taking leave negatively affected workers' performance evaluations, but only for the year that they took the leave. Even when accounting for any potential differences in the performance evaluations of those who did and did not take leave, leave takers received fewer promotions and smaller raises.

Managerial support for use of alternative work arrangements is important when considering any effects on advancement and earnings. According to our company interviews, some managers do not support use of these arrangements because they are seen as accommodations to certain workers—even though the company's leadership views them as part of the overall business strategy. Workers who use these arrangements may experience negative effects if managers place limits on the types of work

and responsibilities they receive. For example, one worker we interviewed noted that she has not been assigned a high-profile project because she works a part-time schedule. Most of the companies we interviewed noted the importance of managers in implementing alternative work arrangements, and as a result, many train managers on this topic. For example, several companies train managers to focus on the quality of an individual's work rather than on when (i.e., what time of day) or where (i.e., at home or at the workplace) they do their work. One company also revised managers' performance criteria to include their response to flexible work arrangements.

On the other hand, some workers do not have the option to use alternative work arrangements for several reasons. For example, some managers do not allow workers to use alternative arrangements because they want to directly monitor their workers, they fear that too many others will also request these arrangements, or they do not understand how it relates to the company's bottom line. In addition, some workers—often those who are lower paid—do not have the option to use alternative arrangements because the nature of their job does not allow it. For example, telecommuting may not be feasible for administrative assistants because they must be in the office to support their bosses. Furthermore, low-paid workers often cannot afford to choose a work arrangement that reduces their pay. For example, some women in lower-paying jobs cannot afford to take any unpaid maternity leave, or to take it for an extended period of time, because of their financial situation.

Potential for Direct Or Indirect Discrimination

Debate exists whether decisions that women make to manage work and family responsibilities are freely made or influenced by underlying discrimination. Some experts believe that women are free to make choices about work and family, and willingly accept the earnings consequences. Specifically, certain experts believe that some women place higher priority on home and family, and voluntarily trade off career advancement and earnings to focus on these responsibilities. Other experts believe that some women place similar priority on family and career. Alternatively, other women place higher priority on career and may delay or decide not to have children. However, other experts believe that underlying discrimination exists in the presumption that women have primary responsibility for home and family, and as a result, women are forced to make decisions to accommodate these responsibilities. One example of this is a woman who must work part time for childcare reasons, but would have preferred to work full time if she did not have this family responsibility. In addition, some experts also suggest that women face

other societal and workplace discrimination that may result in lower earnings. However, according to other experts, although women may still face discrimination in the workplace, it is not a systematic problem and legal remedies are already in place. For example, Title VII of the Civil Rights Act of 1964 prohibits employment discrimination based on gender.

According to some experts and literature, women face societal discrimination that may affect their career advancement and earnings. Some research suggests that the career aspirations of men and women may be influenced by societal norms about gender roles. For example, parents, peers, or institutions (such as schools or the media) may teach them that certain occupations—such as nursing or teaching, which tend to be relatively lower-paying—are identified with women while others are identified with men. As a result, men and women may view different fields or occupations as valuable or socially acceptable. According to some experts, societal discrimination may help explain why men and women tend to be concentrated in different occupations. For example, some research has found that women tend to be over-represented in clerical and service jobs, while men are disproportionately employed in blue-collar craft and laborer jobs.[7] Other research suggests that gender differences exist even among those who are college educated. For example, men tend to be concentrated in majors such as engineering and mathematics, while women are typically concentrated in majors such as social work and education. Research indicates that men and women who work in female-dominated occupations earn less than comparable workers in other occupations.

Additionally, some experts and literature suggest that women face discrimination in the workplace. This type of discrimination may affect what type of jobs women are hired into or whether they are promoted. In some cases, employers or clients may underestimate women's abilities or male co-workers may resist working with women, particularly if women are in higher-level positions. Employers may also discriminate based on their presumptions about women as a group in terms of family responsibilities—rather than considering each woman's individual situation. For example, employers may be less likely to hire or promote

[7]Notably, research indicates that women tend to be concentrated in service-producing occupations, such as retail trade and government, which lose relatively few jobs or actually gain jobs during recessions. However, men tend to be concentrated in goods-producing industries, such as construction and manufacturing, which often lose jobs during recessions.

women because they assume that women may be less committed or may be more likely to quit for home and family reasons. To the extent that employers who offer higher-paying jobs discriminate against women in this way, women may not have the same earnings opportunities as men. Finally, other experts suggest that both men and women who are parents face discrimination in the workplace due to their family responsibilities in terms of hiring, promotions, and terminations on the job.

According to some literature, discrimination may occur if employers enact policies or practices that have a disproportionately negative impact on one group of workers, such as women with children. For example, if an employer has a policy that excludes part-time workers from promotions, this could have a significant effect on women because they are more likely to work part time. Other experts suggest that workplace practices reflecting ideal worker norms—such as requiring routine overtime for promotion—could be considered discrimination. This could impact women more (particularly mothers) and may result in a disproportionate number of men in high-level positions.

Related Research

Anderson, Deborah J., Melissa Binder, and Kate Krause. "The Motherhood Wage Penalty Revisited: Experience, Heterogeneity, Work Effort, and Work-Schedule Flexibility." *Industrial and Labor Relations Review* 56:2 (2003): 273-295.

Appelbaum, Eileen, ed. "The New Realities of Family Life and the Workplace: Is There a Mismatch?" in *Balancing Acts: Easing the Burdens and Improving the Options for Working Families*, 1-9. Washington, D.C.: Economic Policy Institute, 2000, http://www.lights.com/epi/virlib/Studies/2000/balancinga/.

Appelbaum, Eileen, and Lonnie Golden. "The Standard Workday or the Highway: Employers Stall in Delivery of More Flexible Arrangements That Can Help Relieve Workers' Time Squeeze." Washington, D.C.: The Center for Designing Work Wisely, 2002, http://www.cdww.org/pressroom.htm.

Appelbaum, Eileen. "The Transformation of Work and Employment Relations in the U.S." Paper presented at the NICHD/Sloan Foundation Conference on Workplace/Workforce Mismatch? Work, Family, Health, and Well-Being, Washington, D.C.: June 16-18, 2003, http://www.popcenter.umd.edu/conferences/nichd/agenda.html.

Bailyn, Lotte, Robert Drago, and Thomas A. Kochan. "Integrating Work and Family Life: A Holistic Approach." Cambridge, Mass.: MIT Sloan School of Management, 2001, http://icdl.uncg.edu/ft/070202-01.html.

Bardasi, Elena and Janet Gornick. "Women and Part-Time Employment: Workers' 'Choices' and Wage Penalties in Five Industrialized Countries." United Kingdom: Institute for Social and Economic Research, 2000, http://netec.mcc.ac.uk/WoPEc/data/Papers/eseiserwp2000-11.html.

Barnett, Rosalind C. "A New Work-Life Model for the Twenty-First Century." *Annals of American Academy of Political and Social Science* 562 (1999): 143-158.

Bianchi, Suzanne M., and Sara Raley. "Changing Work and Family Demographics." Paper presented at the NICHD/Sloan Foundation Conference on Workplace/Workforce Mismatch? Work, Family, Health, and Well-Being, Washington, D.C.: June 16-18, 2003, http://www.popcenter.umd.edu/conferences/nichd/agenda.html.

Blair-Loy, Mary, and Amy S. Wharton. "Employees' Use of Work-Family Policies and the Workplace Social Context." *Social Forces* 80:3 (2002): 813-845.

Blank, Rebecca M. "The Dynamics of Part-Time Work." (Working Paper Number 4911). Cambridge, Mass.: National Bureau of Economic Research, 1994, http://papers.nber.org/papers/W4911.

Boden, Richard J. Jr. "Flexible Working Hours, Family Responsibilities, and Female Self-Employment." *The American Journal of Economics and Sociology* 58:1 (1999): 71-83.

Bond, James T., Ellen Galinsky, and Jennifer Swanberg. "The 1997 National Study of the Changing Workforce." New York: Families and Work Institute, 1998.

Boston College Center for Work and Family. "Measuring the Impact of Workplace Flexibility." Chestnut Hill, Mass.: Center for Work and Family, 2000, http://www.bc.edu/centers/cwf/research/highlights/.

Bravo, Ellen, Mark Greenberg, and Cindy Marano. "Investing in Family Well-Being, a Family-Friendly Workplace and a More Stable Workforce: A 'Win-Win' Approach to Welfare and Low-Wage Policy," 2002, http://www.economythatworks.org/PDFs/ford_policyfinal.pdf.

Brown, Charles, and Mary Corcoran. "Sex-Based Differences in School Content and the Male/Female Wage Gap." (Working Paper 5580.) Cambridge, Mass.: National Bureau of Economic Research, 1996, http://ideas.repec.org/p/nbr/nberwo/5580.html.

Budig, Michelle J., and Paula England. "The Wage Penalty for Motherhood." American Sociological Review 66:2 (2001): 204-225.

Caputo, Richard K. "Race and Marital History as Correlates of Women's Access to Family-Friendly Employee Benefits." *Journal of Family and Economic Issues* 21:4 (2000): 365-385.

Carr, Deborah. "The Psychological Consequences of Work-Family Trade-Offs for Three Cohorts of Men and Women." *Social Psychology Quarterly* 65:2 (2002): 103-124.

Catalyst. *Flexible Work Arrangements III: A Ten-Year Retrospective of Part-Time Arrangements for Managers and Professionals*. New York: Catalyst, 2000.

Catalyst. *A New Approach to Flexibility: Managing the Work/Time Equation.* New York: Catalyst, 1997.

Cooper, Marianne. "Being the 'Go-To-Guy': Fatherhood, Masculinity, and the Organization of Work in Silicon Valley." *Qualitative Sociology* 23:4 (2000): 379-405.

Correll, Shelley J. "Gender and the Career Choice Process: The Role of Biased Self-Assessments." *American Journal of Sociology* 106:6 (2001): 1691-1730.

Costello, Cynthia B., Vanessa R. Wight, and Anne J. Stone, eds. *The American Woman 2003-2004: Daughters of a Revolution – Young Women Today*. New York: Palgrave Macmillan, 2003.

Crittenden, Ann. *The Price of Motherhood: Why the Most Important Job in the World is Still the Least Valued*. New York: Henry Holt and Company, 2001.

Darrah, Charles N. "Anthropology, Ethnography, and the Thesis of a Workplace/Workforce Mismatch." Paper presented at the NICHD/Sloan Foundation Conference on Workplace/Workforce Mismatch? Work, Family, Health, and Well-Being, Washington, D.C.: June 16-18, 2003, http://www.popcenter.umd.edu/conferences/nichd/agenda.html.

Dodson, Lisa, Tiffany Manuel, and Ellen Bravo. "Keeping Jobs and Raising Families in Low-Income America: It Just Doesn't Work." Cambridge, Mass: Harvard University, Radcliffe Institute for Advanced Study, 2002, http://www.radcliffe.edu/pubpol/boundaries.pdf.

Eaton, Susan C. "If You Can Use Them: Flexibility Policies, Organizational Commitment, and Perceived Productivity." (Draft Working Paper). Cambridge, Mass.: Harvard University, John F. Kennedy School of Government, 2001, http://ksgnotes1.harvard.edu/research/wpaper.nsf/rwp/RWP01-009?OpenDocument.

Employment Policies Institute. "Correcting Part-Time Misconceptions." Washington, D.C.: Employment Policies Institute, 2000.

Ferber, Marianne A., and Jane Waldfogel. The Long-Term Consequences of Nontraditional Employment. *Monthly Labor Review*, 121:5 (1998): 3-12.

Ford Foundation. "Relinking Life and Work: Toward a Better Future." New York: Ford Foundation, 1997, http://www.fordfound.org/publications/recent_articles/life_and_work/relink_toc.cfm.

Firestone, Juanita M., Richard J. Harris, and Linda C. Lambert. "Gender Role Ideology and the Gender Based Difference in Earnings." *Journal of Family and Economic Issues* 20:2 (1999): 191-215.

Fletcher, Joyce K. "Gender Perspectives on Work and Personal Life Research." Paper presented at the NICHD/Sloan Foundation Conference on Workplace/Workforce Mismatch? Work, Family, Health, and Well-Being, Washington, D.C.: June 16-18, 2003, http://www.popcenter.umd.edu/conferences/nichd/agenda.html.

Friedman, Dana E. "Employer Supports for Parents with Young Children." *The Future of Children* 11:1 (2001): 63-77.

Furchtgott-Roth, Diana, and Christine Stolba. *The Feminist Dilemma: When Success is Not Enough*. Washington, D.C.: The American Enterprise Institute Press, 2001.

Galinksy, Ellen, and James T. Bond. "The 1998 Business Work-Life Study: A Sourcebook." New York: Families and Work Institute, 1998.

Galinsky, Ellen, Stacy S. Kim, and James T. Bond. "Feeling Overworked: When Work Becomes Too Much." New York: Families and Work Institute, 2001.

Gerstel, Naomi, and Katherine McGonagle. "Job Leaves and the Limits of the Family and Medical Leave Act." *Work and Occupations* 26:4 (1999): 510-534.

Glass, Jennifer. "Blessing or Curse? "Work-Family Policies and Mothers' Wage Growth Over Time." Updated version of a paper presented at the Population Association of America meeting, March 2000.

Glass, Jennifer. "The Impact of Occupational Segregation on Working Conditions." *Social Forces* 68:3 (1990): 779-796.

Glass, Jennifer. "Sociological Perspectives on Work and Family." Paper presented at the NICHD/Sloan Foundation Conference on Workplace/Workforce Mismatch? Work, Family, Health, and Well-Being, Washington, D.C.: June 16-18, 2003, http://www.popcenter.umd.edu/conferences/nichd/agenda.html.

Glass, Jennifer, and Valerie Camarigg. "Gender, Parenthood, and Job-Family Compatibility." *American Journal of Sociology* 98:1 (1992): 131-151.

Glass, Jennifer L., and Sarah Beth Estes. "The Family Responsive Workplace." *Annual Review of Sociology* 23 (1997): 289-313.

Glass, Jennifer L., and Lisa Riley. "Family Responsive Policies and Employee Retention Following Childbirth." *Social Forces* 76:4 (1998): 1401-1435.

Golden, Lonnie. "Flexible Work Schedules: What Are We Trading Off to Get Them?" *Monthly Labor Review*, 124:3 (2001): 50-67.

Gornick, Janet C., and Marcia K. Meyers. "Parental Care of Children: Family Leave Policy and the Regulation of Working Time," 2002, http://depts.washington.edu/crfam /Symposium1/ Gornick_Meyers_chap5.pdf. (Excerpt from: Janet C. Gornick and Marcia K. Meyers, eds., forthcoming. *Earning and Caring: What Government Can Do to Reconcile Motherhood, Fatherhood, and Employment*. New York: Russell Sage Publications.)

Grover, Steven L., and Karen J. Crooker. "Who Appreciates Family-Responsive Human Resource Policies: The Impact of Family-Friendly Policies on the Organizational Attachment of Parents and Non-Parents." *Personnel Psychology* 48:2 (1995): 271.

Hakim, Catherine. *Work-Lifestyle Choices in the 21st Century: Preference Theory*. New York: Oxford University Press, 2000.

Hammonds, Keith H., and Ann Therese Palmer. "The Daddy Trap." *Business Week*, September 21, 1998, 56.

Hartmann, Heidi, Young-Hee Yoon, and Diana Zuckerman. "Part-Time Opportunities for Professionals and Managers: Where Are They, Who Uses Them, and Why." Washington, D.C.: Institute for Women's Policy Research, 2000.

Hecker, Daniel E. "Earnings of College Graduates: Women Compared to Men." *Monthly Labor Review*, 121:3 (1998): 62-71.

Hewlett, Sylvia Ann. *Creating a Life: Professional Women and the Quest for Children*. New York: Talk Miramax Books, 2002.

Hirsch, Barry. "The Relative Compensation of Part-Time and Full-Time Workers." Washington, D.C.: Employment Policies Institute, 2000.

Holzer, Harry J. "Work and Family Life: The Perspective of Employers." Paper presented at the NICHD/Sloan Foundation Conference on Workplace/Workforce Mismatch? Work, Family, Health, and Well-Being, Washington, D.C.: June 16-18, 2003, http://www.popcenter.umd.edu/ conferences/nichd/agenda.html.

Hundley, Greg. "Male/Female Earnings Differences in Self-Employment: The Effects of Marriage, Children, and the Household Division of Labor." *Industrial and Labor Relations Review* 54:1 (2000): 95-115.

Jacobs, Jerry A. "Changing Hours of Employment in American Families." Paper presented at the NICHD/Sloan Foundation Conference on Workplace/Workforce Mismatch? Work, Family, Health, and Well-Being, Washington, D.C.: June 16-18, 2003, http://www.popcenter.umd.edu/conferences/nichd/agenda.html.

Jones, Ray, and Audrey J. Murrell. "Signaling Positive Corporate Social Performance." *Business and Society* 40:1 (2001): 59-78.

Judiesch, Michael K., and Karen S. Lyness. "Left Behind? The Impact of Leaves of Absence on Managers' Career Success." *Academy of Management Journal* 42:6 (1999): 641-651.

Kalleberg, Arne L., Edith Rasell, Naomi Cassirer, Barbara F. Reskin, Ken Hudson, David Webster, Eileen Appelbaum, and Roberta M. Spalter-Roth. "Nonstandard Work, Substandard Jobs: Flexible Work Arrangements in the U.S." Washington, D.C.: Economic Policy Institute, 1997, http://www.lights.com/epi/virlib/Studies/1997/nonstandardw.PDF.

Keene, Jennifer Reid, and John R. Reynolds. "Gender Differences in the Job Consequences of Family-to-Work Spillover," http://garnet.acns.fsu.edu/~jreynold/ keene_reynolds_asa2002.pdf.

Kelly, Erin, Frank Dobbin, Alexandra Kalev, and Samantha Ammons. "The Princeton-Minnesota Study of Employers' Family Policies: A Report to Respondents," http://www.soc.umn.edu/~elkelly/FinalReport1002.pdf.

King, Jerome E. "Part-time Workers' Earnings: Some Comparisons." *Compensation and Working Conditions* 5:2 (2000): 27-36.

Klerman, Jacob Alex, and Arleen Leibowitz. "Job Continuity Among New Mothers." Demography 36:2 (1999): 145-155.

Kossek, Ellen Ernst. "Workplace Policies and Practices to Support Work and Families: Gaps in Implementation and Linkages to Individual and Organizational Effectiveness." Paper presented at the NICHD/Sloan Foundation Conference on Workplace/Workforce Mismatch? Work, Family, Health, and Well-Being, Washington, D.C.: June 16-18, 2003, http://www.popcenter.umd.edu/conferences/nichd/agenda.html.

Lambert, Susan J. "Lower-Wage Workers and the New Realities of Work and Family." *Annals of the American Academy of Political and Social Science* 562 (1999): 174-190.

Leibowitz, Arleen A. "An Economic Perspective on Work, Family, and Well-Being." Paper presented at the NICHD/Sloan Foundation Conference on Workplace/Workforce Mismatch? Work, Family, Health, and Well-Being, Washington, D.C.: June 16-18, 2003, http://www.popcenter.umd.edu/conferences/nichd/agenda.html.

Levine, Linda. "The Gender Wage Gap and Pay Equity: Is Comparable Worth the Next Step?" Washington, D.C.: Congressional Research Service, 2001.

MacDermid, Shelley M., Leon C. Litchfield, and Marcie Pitt-Catsouphes. "Organizational Size and Work-Family Issues." *Annals of the American Academy of Political and Social Science* 562 (1999): 111-126.

McCrate, Elaine. "Working Mothers in a Double Bind: Working Moms, Minorities Have the Most Rigid Schedules, and Are Paid Less for the Sacrifice." Washington, D.C.: Economic Policy Institute, 2002.

Meiskins, Peter, and Peter Whalley. *Putting Work in its Place: A Quiet Revolution.* New York: Cornell University Press, 2002.

Miree, Cynthia E., and Irene Hanson Frieze. "Children and Careers: A Longitudinal Study of the Impact of Young Children on Critical Career Outcomes of MBAs." Sex Roles 41:11/12 (1999): 787-808.

Osterman, Paul. "Work/Family Programs and the Employment Relationship." *Administrative Science Quarterly* 40:4 (1995): 681.

Perlow, Leslie A. "Putting the Work Back into Work/Family." *Group and Organization Management* 20:2 (1995): 227-239.

Reskin, Barbara F. "Getting it Right: Sex and Race Inequality in Work Organizations." *Annual Review of Sociology* 26 (2000): 707-709.

Roehling, Patricia V., Mark V. Roehling, and Phyllis Moen. "The Relationship Between Work-Life Policies and Practices and Employee Loyalty: A Life Course Perspective." *Journal of Family and Economic Issues* 22:2 (2001): 141-170.

Ruhm, Christopher J. "How Well Do Parents With Young Children Combine Work and Family Life?" Paper presented at the NICHD/Sloan Foundation Conference on Workplace/Workforce Mismatch? Work, Family, Health, and Well-Being, Washington, D.C.: June 16-18, 2003, http://www.popcenter.umd.edu/conferences/nichd/agenda.html.

Saltzstein, Alan L., Yuan Ting, and Grace Hall Saltzstein. "Work-Family Balance and Job Satisfaction: The Impact of Family-Friendly Policies on Attitudes of Federal Government Employees." *Public Administration Review* 61:4 (2001): 452-467.

Schneer, Joy A., and Frieda Reitman. "Effects of Employment Gaps on the Careers of M.B.A.'s: More Damaging for Men Than for Women?" *Academy of Management Journal* 33:2 (1990): 391-406.

Schwartz, Debra B. "An Examination of the Impact of Family-Friendly Policies on the Glass Ceiling." New York: Families and Work Institute, 1994, http://www.ilr.cornell.edu/library/e_archive/gov_reports/GlassCeiling/papers/Family-FriendlyPolicies.pdf.

Sharpe, Deanna L., Joan M. Hermsen, and Jodi Billings. "Factors Associated with Having Flextime: A Focus on Married Workers. *Journal of Family and Economic Issues* 23:1 (2002): 51-72.

Shore, Rima. "Ahead of the Curve: Why America's Leading Employers Are Addressing the Needs of New and Expectant Parents." New York: Families and Work Institute, 1998.

Stolba, Christine. "The Wage Gap." Arlington, Va.: Independent Women's Forum, 2001, http://www.iwf.org/news/IUWageGap.pdf.

The Council of Economic Advisors. "Explaining Trends in the Gender Wage Gap." Washington, D.C.: The Council of Economic Advisors, 1998, http://clinton4.nara.gov/WH/EOP/CEA/html/gendergap.html.

Thompson, Cynthia A., Jeanine Andreassi, and David Prottas. "Work-Family Culture and Climate." Paper presented at the NICHD/Sloan Foundation Conference on Workplace/Workforce Mismatch? Work, Family, Health, and Well-Being, Washington, D.C.: June 16-18, 2003, http://www.popcenter.umd.edu/conferences/nichd/agenda.html.

Tilly, Chris. "Short Hours, Short Shrift: Causes and Consequences of Part-Time Work." Washington, D.C: Economic Policy Institute, 1990, http://www.lights.com/epi/virlib/Studies/1990/shorth.PDF.

U.S. General Accounting Office. *The Changing Workforce: Comparison of Federal and Nonfederal Work/Family Programs and Approaches*. GAO/GGD-92-84. Washington, D.C.: April 23, 1992.

U.S. Department of Labor. "Balancing the Needs of Families and Employers: The Family and Medical Leave Surveys—2000 Update." Washington, D.C., 2001, http://www.dol.gov/asp/fmla.

U.S. Department of Labor, Bureau of Labor Statistics. "Highlights of Women's Earnings in 2001." Washington, D.C., 2002.

Waldfogel, Jane. "Understanding the 'Family Gap' in Pay for Women with Children. *Journal of Economic Perspectives* 12:1 (1998): 137-156.

Waldfogel, Jane. "The Effect of Children on Women's Wages." *American Sociological Review* 62:2 (1997): 209-217.

Williams, Joan. *Unbending Gender: Why Family and Work Conflict and What to Do About It*. New York: Oxford University Press, 2000.

Williams, Joan, and Nancy Segal. "The New Glass Ceiling: Mothers – and Fathers – Sue for Discrimination." Washington, D.C.: The Program on Gender, Work and Family, American University Washington College of Law, 2002 (2nd edition), http://www.wcl.american.edu/gender/workfamily/chilly_climate0211.pdf.

Women's Bar Association of Massachusetts, Employment Issues Committee. "More Than Part-time: The Effect of Reduced-Hours Arrangements on the Retention, Recruitment, and Success of Women Attorneys in Law Firms." Boston, Mass.: Women's Bar Association of Massachusetts, 2000.

Wootton, Barbara H. "Gender Differences in Occupational Employment." *Monthly Labor Review* 120:4 (1997): 15-24.

Appendix IV: GAO Contact and Staff Acknowledgments

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The following individuals also made important contributions to this report: Patrick DiBattista, R. Scott McNabb, Corinna Nicolaou, and Caterina Pisciotta, Education, Workforce, and Income Security Issues. In addition, the following individuals played a key role in developing the statistical model and conducting the analysis: Brandon Haller, Ed Nannenhorn, MacDonald Phillips, and Wendy Turenne, Applied Research and Methods; Scott Farrow, Chief Economist; and Robert Parker, Chief Statistician.

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