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Projecting Labor Force Participtionand Earnings in CBO's Long-Term Microsimulation Model

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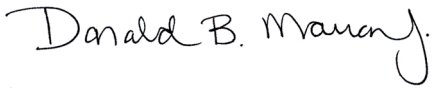
Preface

The Congressional Budget Office (CBO) uses a microsimulation approach to analyze the budgetary and distributional impact of Social Security and other age-related policy issues. This background paper provides a detailed description of one important component in the microsimulation model: the equations used to project labor force participation, hours worked, unemployment, and earnings outcomes. The paper describes the estimated relationships in CBO's microsimulation model, the data sets used, the principles underlying causal effects, and the properties of the projections over time. In keeping with CBO's mandate to provide objective, nonpartisan analysis, the paper makes no policy recommendations.

Amy Rehder Harris, John Sabelhaus, and Jonathan A. Schwabish wrote the paper. Paul Cullinan and David Brauer provided helpful comments.

Allan Keaton edited the paper, and Christine Bogusz and Loretta Lettner proofread it. Maureen Costantino prepared the paper for publication, Lenny Skutnik produced the printed copies, and Simone Thomas prepared the electronic version for CBO's Web site (www.cbo.gov).



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October 2006

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Introduction

This background paper describes the methods underlying labor force and earnings projections in the Congressional Budget Office's (CBO's) long-term microsimulation model (CBOLT).[1] CBO developed a microsimulation approach for analyzing Social Security and other long-term policy issues in order to provide the Congress with comprehensive analyses of the budgetary, distributional, and aggregate economic aspects of various policy choices. The microsimulation approach makes it possible to examine how policy affects individuals' benefits under current law and proposed alternatives, including individual accounts.[2]

The methodological strategy in microsimulation is to generate realistic demographic and economic outcomes for a representative sample of the population and then apply tax and benefit rules to that sample in order to draw inferences about the effects of various policy alternatives. Labor market outcomes are fundamental when analyzing Social Security and other age-related policy issues because the payroll taxes collected from individuals and benefits paid to individuals both depend on earnings. Projected individual earnings determine aggregate revenues and outlays and play a key role in the distribution of taxes and benefits across the population.

Development of the Model

A microsimulation model starts with individual data from a representative sample of the population and projects demographic and economic outcomes for that sample through time. In CBOLT, the basic demographic processes include fertility, educational attainment, marital transitions, marital partner assignments, and eventual death.[3] This background paper describes the methods for projecting labor-related economic outcomes for the representative sample in CBOLT; those are the modules for labor force participation, hours worked, unemployment, and annual earnings. The equations are designed to generate realistic patterns of behavior in the representative sample and to operate as part of an overall framework that includes macroeconomic and aggregate budgetary outcomes.

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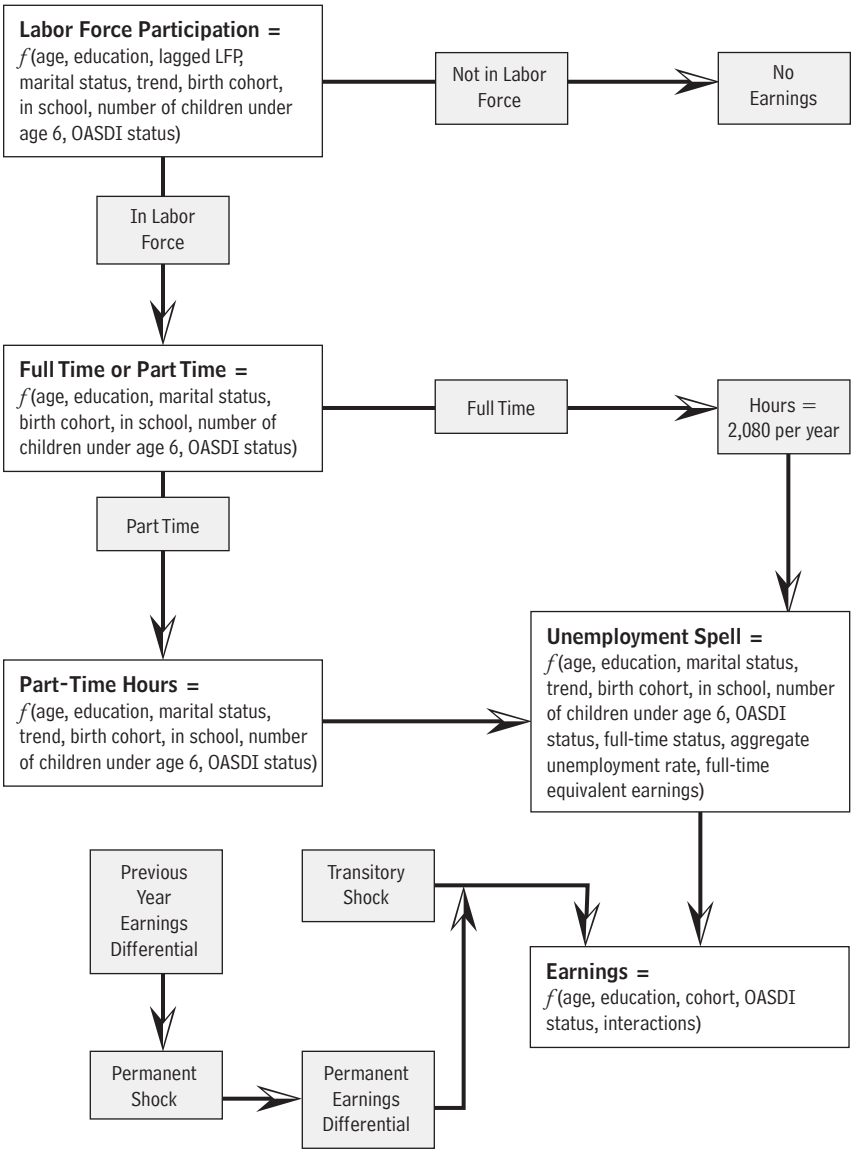
1. These modules have been updated from earlier work; see Amy Rehder Harris and John Sabelhaus, "Projecting Longitudinal Earnings Patterns for Long-Run Policy Analysis," Technical Paper 2003-02 (April 2003), available at www.cbo.gov.

2. See, for example, Congressional Budget Office, *Long-Term Analysis of S. 2427, the Sustainable Solvency First for Social Security Act of 2006* (April 2006); *Long-Term Analysis of the Liebman-MacGuineas-Samwick Social Security Proposal* (February 2006); and *H.R. 3304, Growing Real Ownership for Workers Act of 2005* (September 2005).

3. See Josh O'Harra, John Sabelhaus, and Michael Simpson, "Overview of the Congressional Budget Office Long-Term (CBOLT) Policy Simulation Model," Technical Paper 2004-01 (January 2004); Kevin Perese, "Mate Matching for Microsimulation Models," Technical Paper 2002-03 (November 2002); and Josh O'Harra and John Sabelhaus, "Projecting Longitudinal Marriage Patterns for Long-Run Policy Analysis," Technical Paper 2002-02 (October 2002).

Figure 1.

Steps to Project Earnings in CBO's Microsimulation Model



Source: Congressional Budget Office.

Note: LFP = labor force participation; OASDI = Old-Age, Survivors, and Disability Insurance.

This discussion of labor market and earnings projections starts with the basic demographic outcomes for the representative sample. Then, given an individual's age, sex, education, marital status, fertility history, and Social Security beneficiary status, how should current-year labor force activity and earnings best be projected? The CBOLT approach is to break the process of projecting earnings into several logically separate steps (see Figure 1). The steps are sequential, and involve solving for each person's labor force participation, full-time or part-time employment status, number of hours

worked, presence of an unemployment spell, and an idiosyncratic earnings component that determines final earnings.

Each step of the labor market outcomes involves a deterministic, equation-based component but also involves some degree of randomness. For example, a given equation may generate a 60 percent chance that some outcome (for example, entering the labor market) will occur for a given individual. A model-generated random number (between 0 and 100 percent) for that individual is then compared with that probability to determine the actual outcome (in this example, if the random number is less than 60 percent, the individual enters the labor market). Given a large enough sample, the fraction of the population assigned a particular outcome will match the average probability of that outcome.

Each simulation step uses a different set of predictive variables, and relationships between the labor market outcomes and the underlying determinants are estimated using March Current Population Survey (CPS) data. (See Appendix A for a description of the CPS data.) The modeled processes often exhibit a high degree of persistence—for example, after controlling for observable characteristics, people who worked in a given year are more likely to work the following year. That persistence is captured explicitly in some equations using lagged variables or implicitly in other equations using an error-correction approach applied to the CBOLT sample data. (See Appendix B for a description of the CBOLT micro data file, the Continuous Work History Sample, CWHS.)

Although the methodological steps for determining earnings have some common features, looking at the steps in sequence helps explain the aspects of behavior that each equation or process attempts to capture:

- **Labor Force Participation.** In the first step, the decision to enter the paid labor force is predicted for each person using binomial logit regressions with the following set of covariates: age, education level, in-school status, marital status, Social Security beneficiary status (shown in the figures as Old-Age, Survivors, and Disability Insurance, or OASDI, status), number of children under age 6 (for women), and lagged labor force participation, along with effects of time (trend) and birth cohort.[4] Separate equations for men and women are estimated using CPS data and are based on an age-centering approach that allows flexibility in the relationship between labor force participation and the underlying determinants across age groups. Observed strong persistence in labor force participation behavior is captured directly through the lagged labor force term, an effect that grows with age and is uniformly larger for women than for men.

4. Individuals are grouped into birth cohort by decade of birth—for example, people born between 1940 and 1949 constitute one birth cohort.

- **Full-Time Versus Part-Time Employment.** For those individuals in the representative sample predicted to be in the labor force, the second step is to assign full-time or part-time employment status. Like labor force participation, full- versus part-time work is predicted using separate age-centered regressions for men and women, where the explanatory variables include age, education level, in-school status, marital status, Social Security beneficiary status, number of children under age 6 (for women), and birth cohort. The effect of education on full-time status is large and statistically significant for both men and women but has a slightly stronger impact for men. The notable difference between the equation for labor force participation and the equation for full-time or part-time work is the method for capturing persistence in individual behavior. Given the lack of information about lagged work hours in the CPS data, the method used for the full-time versus part-time equation is an error-correction approach, in which the estimated equations are adjusted to match actual longitudinal patterns in the historical CBOLT sample data. (See Appendix C for details about the equations used in the error correction.)

- **Hours Worked.** The third step in estimating a labor force is to assign hours to all workers. Full-time workers by definition work 2,080 hours per year (40 hours a week for 52 weeks, including paid vacation and sick leave). The number of hours worked for part-time workers is estimated using an ordered logit model with six categories of hours worked. The portion of part-time workers with less than 1,000 hours per year has fallen since the mid-1970s, driven almost entirely by the dramatic fall in the number of women working fewer part-time hours. The ordered logits attempt to capture this secular trend by using the following regressors: age, education level, in-school status, marital status, Social Security beneficiary status, and the number of children under age 6 (for women), along with trend and birth cohort. The resulting projections show a stable trend in the share of workers in each of the six categories of hours worked, with a greater portion of women than men in the categories for fewer hours worked. As with the full-time versus part-time work equation, the part-time hours equations are calibrated to match longitudinal outcomes from the CWHS.

- **Unemployment.** Given hours projections, all individuals designated as being in the labor force are probabilistically assigned an unemployment spell, again using CPS data. The regressors in these age-centered logit regressions include age, education level, in-school status, marital status, Social Security beneficiary status, the number of children under age 6 (for women), an indicator for full-time status, projected full-time equivalent (FTE) earnings, and the aggregate unemployment rate, along with trend and birth cohort. As expected, the aggregate unemployment rate, used to account for fluctuations in the macroeconomy, has a positive effect on an individual worker's likelihood of experiencing an unemployment spell and is larger for men than for women. Full-time status enters the model with a negative coefficient, also as expected.

- **Earnings.** The first four processes project labor force participation, hours worked, and unemployment spells for a representative microsample. Moving from effective labor supply to actual earnings requires two more steps. The first is an estimated relationship between potential earnings (in the CBOLT microsimulation model, this is FTE earnings) and demographic variables such as age, sex, education, and birth cohort. The second is a method for projecting the idiosyncratic earnings piece—the so-called earnings differential that distinguishes a given individual from other people in the same demographic group. Earnings differentials are generally persistent, but there is a great deal of variance in a person's earnings over his or her lifetime, so CBOLT uses an approach that allows for both permanent and transitory earnings components.

The relationship between demographics and potential earnings is designed to capture the predictable differences in earnings across groups. After controlling for changes in average wage rates over time that are attributable to productivity and inflation, the goal of the earnings equations is to isolate a stable historical relationship between earnings and observable demographics. One complicating factor is the increase in the relative earnings of college graduates over the last few decades, but this can be statistically reconciled using a simple interaction between birth cohort and education. The results of the estimated equations are age-earnings profiles that vary by sex, education, and birth cohort; those profiles reflect predictable differences across groups.

The predictable component of differences in earnings across individuals represents only a small fraction of the overall differences, which means the estimated earnings equations are merely a starting point for predicting earnings outcomes. The more important task is to project how a given individual's actual earnings will differ from the value predicted by the earnings equation. This idiosyncratic difference in CBOLT has two components (see Figure 1 and Appendix D). The first component of the error term is a permanent differential, which evolves slowly over time through a series of permanent shocks. The second is a transitory shock, which has a much larger standard deviation but lasts only one year. The probability distributions for the permanent and transitory shocks are chosen to generate an actual earnings distribution (around the predicted earnings) that matches the recent historical period. The ultimate realized earnings distribution in a given year depends on the equations that determine potential earnings, the idiosyncratic error terms, and the projections of actual hours worked.

Evaluating Projected Labor Market Outcomes

The objective of the labor force and earnings modules is to predict realistic outcomes across the population through time. Those projected outcomes are evaluated in this background paper using tabulations that compare the projections with historical experience. Some behaviors, such as the persistence in labor force attachment, are projected to look much as they did in history. Other features, such as the generally rising labor force participation of women, are projected to evolve and eventually reach a new equilibrium level as birth cohort effects are fully phased in. Some of the divergent

trends, such as the increase in women's earnings, have direct implications for features of Social Security such as spousal and auxiliary benefits.

Projecting Labor Market Participation and Hours Worked

As indicated earlier, the CBOLT microsimulation approach for projecting annual hours worked proceeds in four steps. The first predicts labor force participation, which is the decision about whether to enter the paid labor force. The second step, conditional on entering the labor force, assigns full-time versus part-time employment status. The third step assigns total annual hours, conditional on full- or part-time employment status. (Individuals designated as full time are assigned 2,080 work hours. Individuals designated as part time are assigned annual hours from one of six possible values.) Finally, every individual in the labor force is at risk for an unemployment spell that reduces actual hours worked and thus earnings.

Labor Force Participation

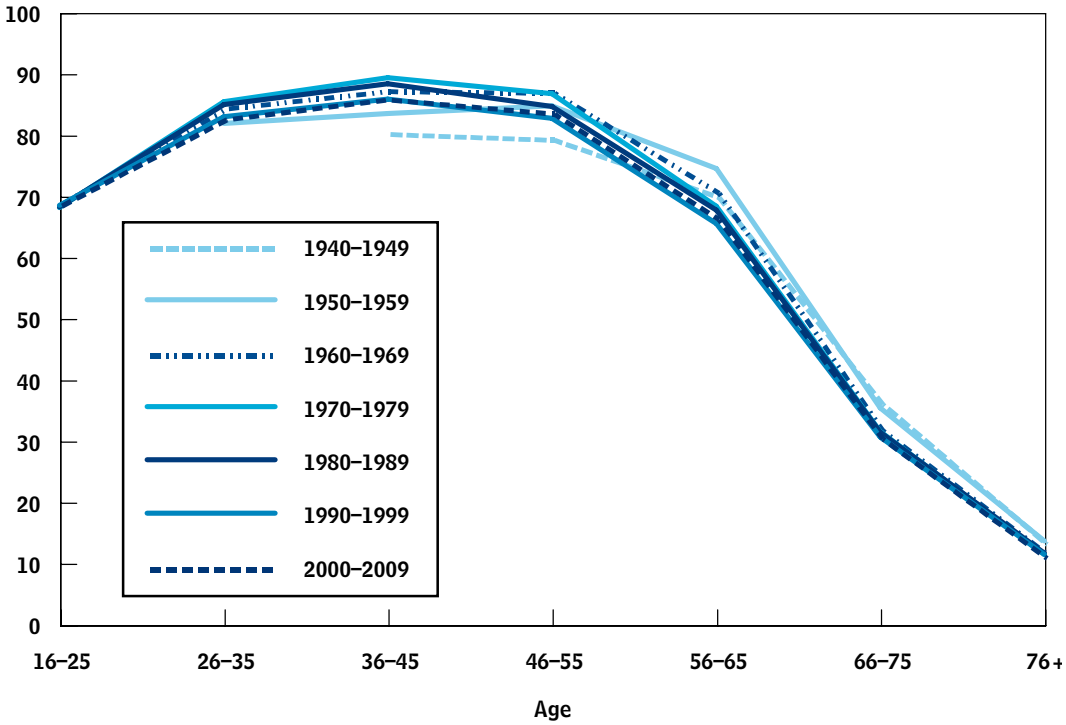
The portion of the U.S. population that participates in the labor market in a given year is very high (see Figure 2 for men and Figure 3 for women). Beyond that simple observation, the most noticeable patterns of labor force participation are a distinct inverted U-shape (indicating that middle-aged men and women are much more likely to work than the young and the old) and trends across birth cohorts (indicating generally rising participation for women and generally falling participation for men). The equations used to predict labor force participation in CBOLT are designed to reflect those general patterns across age and cohort groups and to capture differences across individuals that are correlated with Social Security benefit receipt, marital status, educational attainment, in-school status, and number of children under age 6 (for women). The equations also include terms for whether the person was in the labor force in the previous year because of the persistence in labor force attachment that remains even after controlling for other determining variables.

The approach used to estimate the labor force participation equations for CBOLT is chosen to allow maximum flexibility in the relationships between the explanatory variables and the predicted outcome. The approach used here, age-centered regressions, estimates the equation—in this case, a logit equation for the probability of working—separately for each age and sex group. Given the limited available data, however, it is impossible to estimate the equations using data for just a single year of age, so the age-centered approach uses every observation for ages within a preset band around the specific age group being analyzed. The band on each side of a specific age group for the CBOLT labor force equations is generally set to five years, so (for example) the sample used to estimate the labor force participation equation for 25-year-

Figure 2.

Actual and Projected Labor Force Participation for Men, by Birth Cohort

(Percentage working)



Source: Congressional Budget Office.

Note: All values for the 1990-1999 and 2000-2009 birth cohorts are projections.

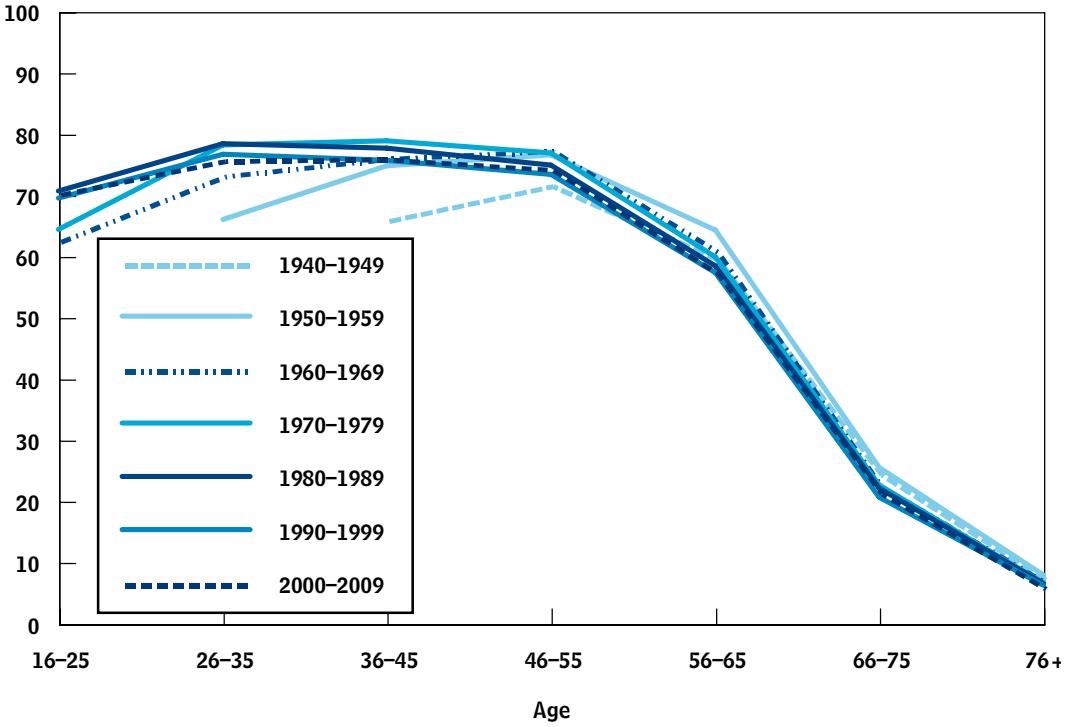
olds actually includes everyone between 21 and 29 years old. The sample for estimating the 26-year-old equation includes everyone between 22 and 30, and so on.[5]

5. The exceptions to the five-year age bands are at either end of the age distribution, where the data are not symmetric, and at ages 61 through 66 where single-year age groups are used to isolate the effects of Social Security retirement benefit eligibility at those ages. Also, in addition to restricting the sample used to within five years of the age group being considered, the estimation procedure applies declining weights to observations on the basis of differences in age from the group being considered. Each person in the reference group (age 25 in the example) gets a weight of 1.0, each in the group on either side (24- and 26-year-olds) gets a weight of 0.8, each in the next two groups (23- and 27-year-olds) gets 0.6, and so forth, and each person in the last groups considered (21- and 29-year-olds) gets a weight of 0.2. The declining weights are a version of kernel smoothing often used in data analysis to try to get maximum statistical precision out of small samples.

Figure 3.

Actual and Projected Labor Force Participation for Women, by Birth Cohort

(Percentage working)



Source: Congressional Budget Office.

Note: All values for the 1990-1999 and 2000-2009 birth cohorts are projections.

The age-centering technique for estimating statistical relationships leads to separate sets of coefficients for each age group (see Table 1 on page 34 for men and Table 2 on page 38 for women).[6] This is the sense in which age-centering introduces maximum flexibility into the relationship between explanatory and dependent variables. Notice, for example, that the negative effect of Social Security benefit receipt on labor force participation rises with age for both men and women up to retirement age, and thereafter falls off. If the model used just one equation for men and one for women to predict labor force participation, the coefficient on Social Security benefit receipt would be equal for all age groups.[7] The age-centering approach allows the coefficients on

6. In the coefficient tables in this document, coefficient values shown in bold indicate statistical significance at the 5 percent level. Statistical significance of the threshold values of the ordered logit regressions is not evaluated.

7. An alternative specification could include interaction of age and beneficiary status terms. Such a specification builds additional structure into a regression that is already categorized by separate age groups.

Social Security benefit receipt and on the other independent variables to vary with age. The results show that the values vary dramatically.[8]

The basic relationships reflected in the coefficient patterns are generally those that intuition would suggest. Social Security benefit receipt has a negative effect on labor force participation for both men and women, and the effect is largest in middle age, where disability insurance is the likely source of benefit receipt. Disability beneficiaries are inherently less likely to work; even those able to work in some capacity are discouraged from doing so by program restrictions. At older ages the effect of benefit receipt is not as strong because many older worker or spousal beneficiaries still participate in the labor force to some degree even though they are getting benefits.

The correlation between marital status and labor force participation is captured by using two dummy variables that reflect whether the person is currently married or never married (alternatives to those possibilities are that they are widowed or divorced). The strongest correlation is the negative relationship between marriage and women's participation; for men the correlation is weaker and varies somewhat by age. There is a strong positive relationship of marriage for men in middle age; middle-aged married men are more likely to work than middle-aged widowed or divorced men.

Another key demographic determinant of labor force participation for women is the number of children under 6 years of age. Again, the effect is expected because the presence of young children lowers labor force participation, and the effect is strongest during the most likely childbearing years. The importance of age-centering comes through again in these estimates; the coefficient on children under age 6 for a woman in her 50s is less than half of that for a woman in her 20s. That occurs because, if a woman in her 50s has children 6 years of age or younger, she is likely to have started her family much later and therefore is probably more attached to the labor market.

The effect of educational attainment on labor force participation is captured through a variable for whether the individual is currently enrolled in school and through a series of dummy variables for ultimate education level. The in-school variable is used in the equations for ages 16 through 24, and the education-level dummies are used for all age groups 25 and older. For the labor force participation regressions, the omitted group is those with less than high school education; the three reported coefficients are for high school graduates, those with some college, or college graduates.

Coefficients on the in-school variables are all negative, as expected. If individuals are in school they are less likely to be in the labor force. The effect rises with age between

8. The age-centering technique includes age itself as an independent variable but only to capture any residual differences not reflected in the other variables. In the tables, the column "Coefficient for Age + Constant" includes the estimated constant term, plus the age coefficient multiplied by the age for that group. Because of the multicollinearity introduced by the combination of the constant and age terms, statistical significance is determined by either of the two variables.

16 and 24 for both men and women for the following reason: Most 16-year-olds are in school, so that is not a clearly delimiting factor for predicting who among them will be in the labor force. At age 24, the relationship is stronger because most people who are not in college are working to some extent.

The education coefficients for both men and women are generally positive, increasing with the level of educational attainment, which suggests stronger labor force attachment as education rises. There are some notable exceptions—for example, men through age 40 with some college education work less than the control group (those with less than a high school education). The effects are also stronger and more systematic for women: college-educated women are always more likely to work than women in the other education groups.

The magnitudes of the coefficients on the demographic variables are all modest when compared with the effect of lagged labor force participation. The coefficient on the variable that measures whether the individual worked the previous year is positive and is an order of magnitude greater than the coefficients on marital status, education, or (for women) the number of children under age 6. As noted before, the portion of the population participating in the labor force at most ages is quite high, so one might think of the labor force participation equation as really predicting those who will not participate in a given year. That makes it easier to interpret the coefficient on lagged participation: the individuals most likely not to work this year are the ones who did not work last year. This variable captures the unobserved heterogeneity in behavior that is crucial to getting the sample to reflect the real-world population.

Even after controlling for demographic effects and lagged labor force participation, there has been a noticeable increase in labor force participation for women at most ages and a less noticeable but statistically significant decrease for men. Some of those trends are captured by the demographic variables and lagged effects: women in their early 20s are increasingly less likely to have children and thus are more likely to work at those ages. That increase in labor force participation also leads to higher predicted participation at older ages through the lagged labor force participation coefficient. Still, there are unexplained changes in participation rates across time and birth cohort. For example, married women with children today are more likely to work than were married women with children in the past. Those unexplained trends are captured using trend terms at each age, along with birth cohort effects. The differences between men and women come through clearly in those terms, with strong positive trend coefficients for women and weak, often negative, trend coefficients for men. In the projections, trend terms are not extended, and the cohort terms (for future cohorts) are all set equal to those of the most recently observed birth cohort that has attained that age.

The equations for predicting labor force participation in CBOLT can be characterized as simply describing patterns of labor force participation across demographic groups and time, as opposed to generating predictions based on economic behavior. Econo-

mists often focus on how policy affects labor supply behavior; many models predict behavior on the basis of utility-maximizing principles. The labor force participation equations in CBOLT are not derived from an explicit optimizing model that would include, for example, the effect that tax policy has on the trade-off between leisure and consumption. This is in large part because the primary goal of the microsimulation is to generate a rich data set with realistic demographic and economic heterogeneity. Utility-maximizing models place significant constraints on the extent to which that richness can be generated within the model.

Although CBOLT does not start with a utility-maximizing framework, there are important policy effects built into the labor force modules, albeit indirectly. For example, the decision to claim Social Security benefits in CBOLT is based on factors such as the level of benefits compared with lifetime earnings, actuarial adjustment factors for early claiming, and Medicare eligibility age. Those policy variables have an effect on labor supply through the coefficient on Social Security beneficiary status. Once an individual makes the decision to claim benefits, he or she is less likely to work. Also, as shown later in the descriptions of the labor market equations, beneficiaries who enter the paid labor force are less likely to work many hours.

The predicted lifetime labor force participation rates generated by the model for current and future cohorts of workers make sense in the context of historical trends (see Figure 4 for men and Figure 5 for women).[9] For each birth cohort, one of the important measures of labor force participation outcomes for Social Security purposes is the number of years worked as of retirement age, fixed here at age 62. For men, there is great stability in the predicted distribution of years worked, with fewer than 40 percent working less than 36 years. The only significant variability for men is for those who will retire in the next few years; they are less likely to be covered by Social Security for most of their lives than future cohorts. For women, there are noticeable increases in lifetime participation for all retiring cohorts through about 2030, at which point the portion of lifetime that is worked stabilizes to less than that for men but remains significantly above that for women retiring today. Those trends show how the trend and cohort terms interact with forecast demographics in the CBOLT projections; the equations capture changes in behavior that have occurred through the end of the historical period but, beyond letting those effects work their way through the future on a cohort basis, there are no further projected changes in behavior.

Full-Time Versus Part-Time Employment

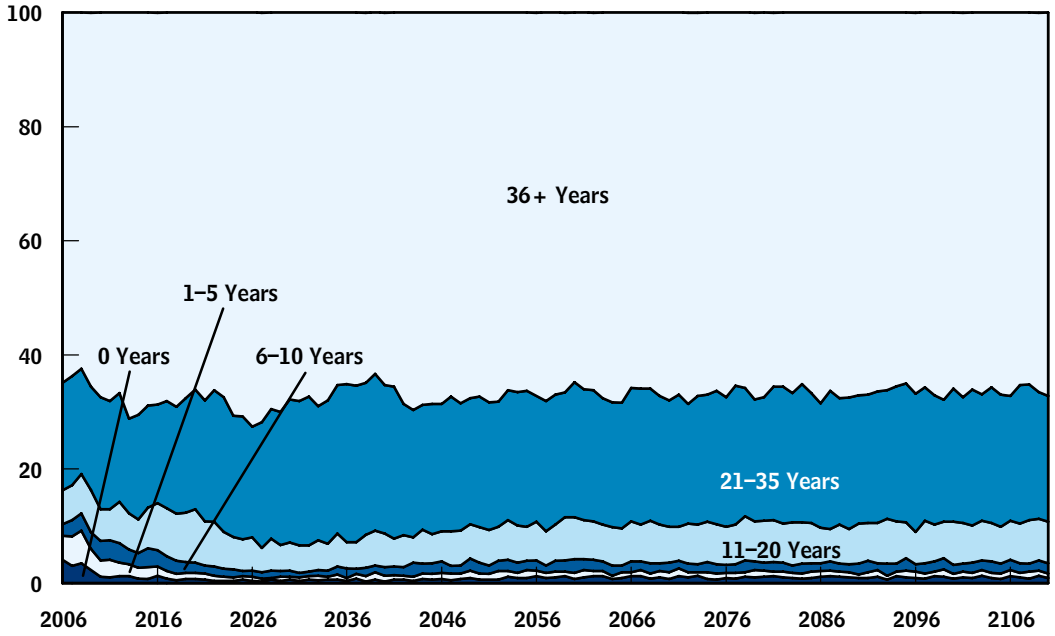
Conditional on participating in the paid labor market, the portion of people working full time has an inverted U-shaped pattern across age groups (see Figure 6 on page 14 for men and Figure 7 on page 15 for women) similar to the pattern observed for the

9. These projections come from a CBOLT baseline simulation in which all the demographic inputs for the labor force participation equations—marital status and education—are generated by other parts of the model.

Figure 4.

Projected Longitudinal Labor Force Participation for 62-Year-Old Men

(Share, by number of years worked)



Source: Congressional Budget Office.

decision to enter the labor market.[10] There are sharp differences between men and women, with more than 90 percent of middle-aged men in the labor force working full time but only about 70 percent of middle-aged women working full time. The equations used to predict full-time participation are structured much like the labor force participation equations described in the previous section: they are age-centered logits with the same basic control variables, including Social Security benefit receipt, marital status, education, number of children under age 6 (for women), and birth cohort.

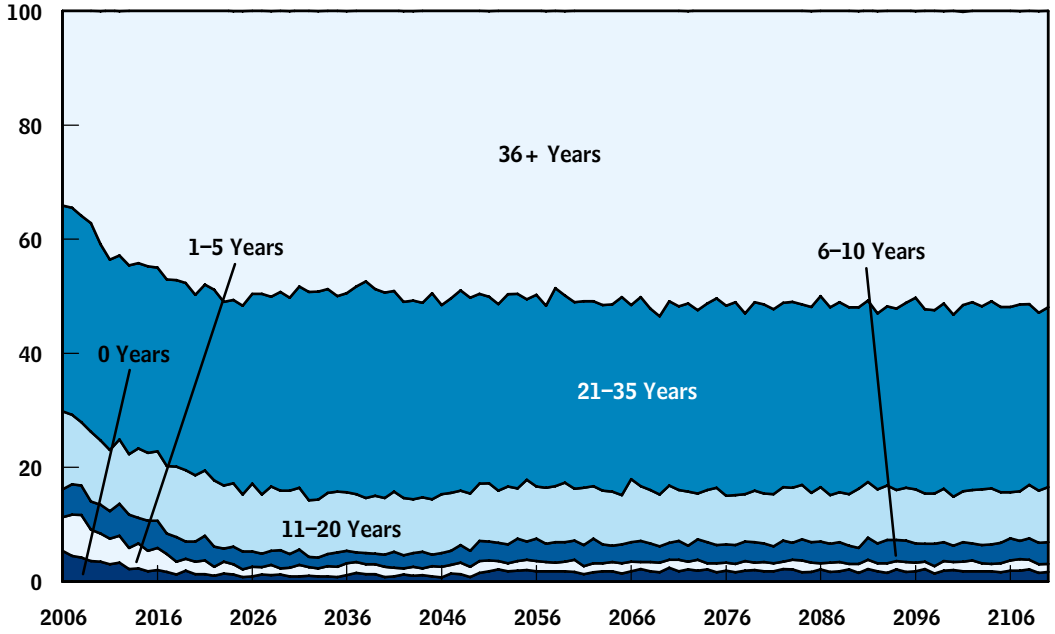
Estimated coefficients for the age-centered full-time work equations show patterns that are quite similar to those for labor force participation (see Table 3 on page 42 for men and Table 4 on page 46 for women). The coefficients on Social Security benefit receipt are all negative and are quite large compared with any of the demographic variables. It is also interesting to distinguish those estimates from estimates for labor force

10. In the CPS data used to estimate the labor force modules, the cutoff for full-time status is set to 1,750 annual hours, which is about 35 hours per week. That definition concurs with the definition used by the Bureau of Labor Statistics and with the definition provided (for example) by Julie L. Hotchkiss, "The Definition of Part-Time Unemployment: A Switching Regression Model," *International Economic Review*, vol. 32, no. 4 (1991), pp. 899–917.

Figure 5.

Projected Longitudinal Labor Force Participation for 62-Year-Old Women

(Share, by number of years worked)



Source: Congressional Budget Office.

participation: in the labor force participation equations, the magnitudes are lower for groups around retirement age, but that is not the case in the equations for full-time work. The probability of working full time is conditional on working in the first place: if a person is both working and collecting benefits, he or she is more likely to be working part time.

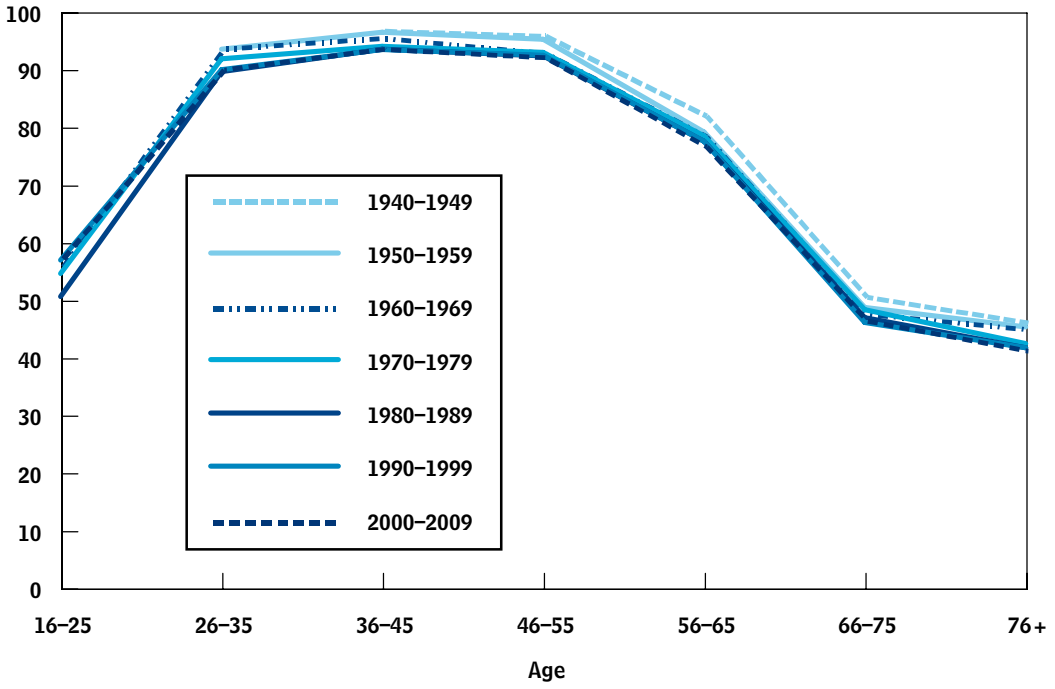
The estimated effects of marital status on full-time work are of opposite directions for men and women over most prime-age working groups. For men, marriage has a strong positive effect on full-time work, and never having been married (compared with the omitted reference group of the widowed and divorced) has a negative impact. For women, the effects are just as strong, but in the opposite direction. Being married has a negative impact on the probability of working full time. In addition, for women, the effect of having children under age 6 further depresses the likelihood of full-time work.

Educational attainment also plays an important role in the probability of working full time. For those 24 and younger, being enrolled in school lowers the probability of full-time work for both men and women. Although there are a few mixed coefficients for people in their mid-20s, the effect of educational attainment for prime-age workers is strong for both men and women, generally rising as education level increases.

Figure 6.

Actual and Projected Full-Time Employment for Men, by Birth Cohort

(Percentage working)



Source: Congressional Budget Office.

Note: All values for the 1990-1999 and 2000-2009 birth cohorts are projections.

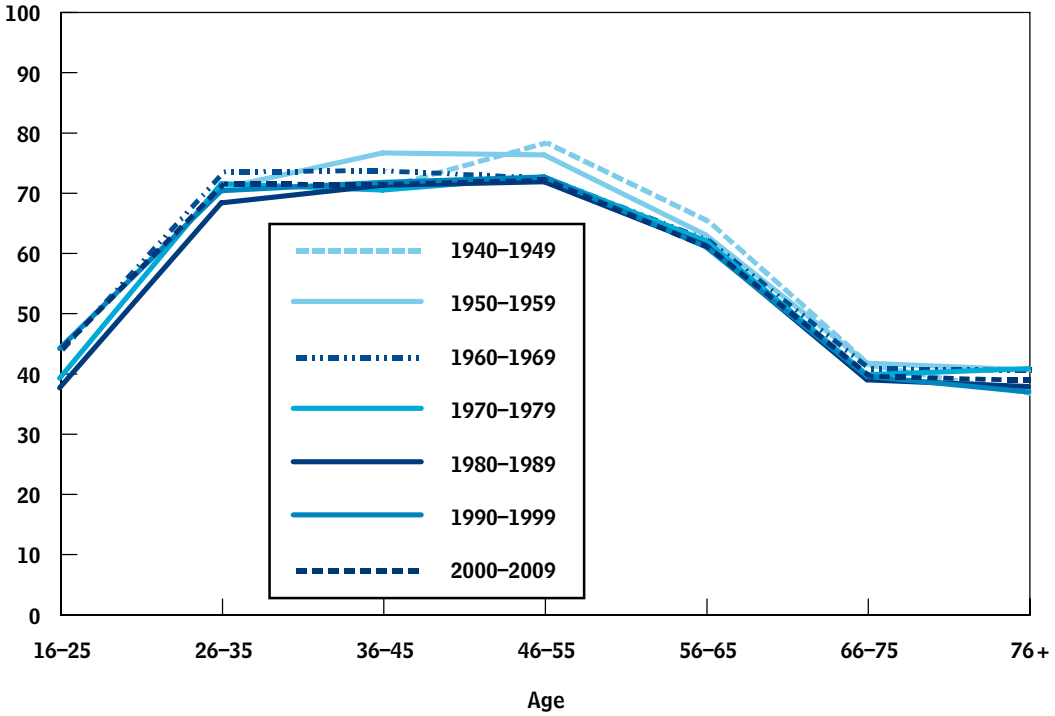
The equations for full-time work use a simpler approach than do the labor force participation equations to control for the effects of differences across time. The equations for full-time work include only 10-year birth cohort dummies, which capture changes in behavior over time that are not associated with other control variables. Much like the equations for labor force participation, time effects are generally small for middle-aged men but are strong and positive for middle-aged women.

One other important difference between the full-time work equations and the labor force participation equations is the method to control for person-level heterogeneity. There is significant persistence in the probability of working full time, just as there is in labor force participation, but there are no lagged variables used in the full-time equation. That difference in specification is because of data limitations not because the principles are inherently different. The CPS data used to estimate both sets of equations have a measure of lagged labor force participation but have no measure of lagged employment status. (See Appendix A for details.)

Figure 7.

Actual and Projected Full-Time Employment for Women, by Birth Cohort

(Percentage working)



Source: Congressional Budget Office.

Note: All values for the 1990-1999 and 2000-2009 birth cohorts are projections.

Because of those data limitations, CBOLT uses an alternative error-correction approach for capturing persistence in individuals' employment status over time.[11] That alternative approach derives from the method used to impute hours worked in the historical administrative data files that are inputs to CBOLT. Those historical CWHS data have several demographic variables and total annual earnings, but there are no measures of hours worked. Therefore, CBOLT uses modified versions of the hours-worked equations to infer the total annual hours that people in the sample worked in the historical period. Those predicted historical hours worked are then used as a benchmark against CPS data to assign hours worked in the CBOLT micro data file.

11. Another alternative is to use a longitudinal data set such as the Panel Survey on Income Dynamics (PSID), which would allow a specification with lagged employment status similar to the equation for labor force participation. Indeed, earlier versions of CBOLT relied on that approach, but significant problems arose because of the size of the PSID data sample and because there are some conceptual differences between CPS and PSID measures.

The equations used to impute historical hours worked are the same as the ones used to project earnings in the future, except that they add one variable: actual earnings during the year (see Table C-1 on page 86 for men and Table C-2 on page 90 for women). For example, the equations consider how much a person earned during the year (along with the other demographic variables and time effects) to infer whether the person worked full or part time. Those equations have much stronger statistical capabilities than do the equations described above for predicting employment status in the CBOLT projections because the amount a person earned generally indicates whether he or she is likely to have worked full or part time.

The historical versions of the employment status equations are not useful for making projections. Such equations are inappropriate for the CBOLT projection modules because, looking forward, CBOLT solves for labor supply before it solves for earnings. Yet, there is a role for the historical employment status equations in the projections. In a given year, CBOLT makes three calculations for each person to predict employment status. The first is the baseline probability from the equations described in this section, in which the probability of working full time is a function of age, sex, Social Security beneficiary status, marital status, education, number of children under age 6 (for women), and birth cohort. The second uses the same calculation for the same person but in the prior year, when that person's demographic variables were slightly different. The third calculation is also for the prior year but uses the historical version of the equation, which is possible because the person's earnings for the prior year are known.

It is the difference between the second and third calculations that is used to introduce persistence into the employment status patterns. Consider a person who has a 50 percent chance of working full time this year in the baseline equation. Then, using that person's demographics from the previous year, consider that the same person had a 45 percent chance of working full time the previous year. Finally, given knowledge of the previous year's earnings, consider that this person had an 80 percent chance of working full time the pervious year (because he or she had higher earnings than other people in the same demographic situation). The one-year lagged gap between the two predictions (in the example, 80 percent minus 45 percent, equaling 35 percent) is added to the current year projection (50 percent) to yield the final probability of working full time in the current year (85 percent).

That method of error correction is reasonably accurate for introducing the degree of persistence in employment status over time observed in longitudinal data (see Table 5 on page 50 for men and Table 6 on page 51 for women). For any age group at any point in time, it is possible to compute one-year transitions across employment status groups of not working, working full time, and working part time. Those one-year transitions vary across age and sex groups but, as shown in the tables, the transition rates do not vary significantly over time. The persistence introduced through the error-correction approach is crucial for simultaneously generating realistic cross-sectional and longitudinal earnings patterns in the CBOLT microsimulation.

Hours for Part-Time Workers

The large majority of middle-aged people in the labor force work full time and are assigned a standard full-time measure of annual hours: 2,080. The equations for part-time hours apply to the rest of the labor force (those who do not work full time). The goal is to generate realistic heterogeneity in annual hours in the part-time population by putting those workers into one of six groups. The approach uses ordered logit equations where the possible outcomes for annual hours range from very low (125 hours per year) to nearly full time (1,625 hours per year).[12]

The factors used to predict part-time hours worked are the same factors used to predict labor force participation and full- versus part-time work (see Table 7 on page 52 for men and Table 8 on page 56 for women). The list of control variables includes Social Security benefit receipt, marital status, education, number of children under age 6 (for women), trend and birth cohort. As with the labor force participation and full- versus part-time equations, the approach uses an age-centered estimation.

Most observations about coefficient values mirror those made for the equation for full- versus part-time work. However, most of those observations are somewhat muted. For example, a woman who is married and has a child under age 6 is less likely to work full time than a woman who is unmarried and without children. She is also less likely to work many hours conditional on being part time. However, the magnitude of the second effect is smaller; the key is that she works part time, and the annual hours worked conditional on being part time are harder to predict.

As in the case for the full- versus part-time equation, the CPS has no lagged information about hours worked that can be used to directly incorporate individual persistence over time. Therefore, CBOLT uses the same error-correction mechanism described above for full- versus part-time work: it makes three calculations for each part-time person in each year. The first is the prediction from the equations discussed here (see Tables 7 and 8), the second is from the same equations but lagged one year, and the third is from the imputations of the lagged equations that include actual earnings as a regressor (see Table C-3 on page 94 for men and Table C-4 on page 98 for women). As before, the gap between the two lagged probabilities is used to error-correct the equations going forward and to maintain longitudinal correlations.

CBOLT projects that the portion of the population assigned to each possible outcome for part-time hours will remain stable going forward (see Figure 8 for men and Figure 9 for women).

Unemployment Spells

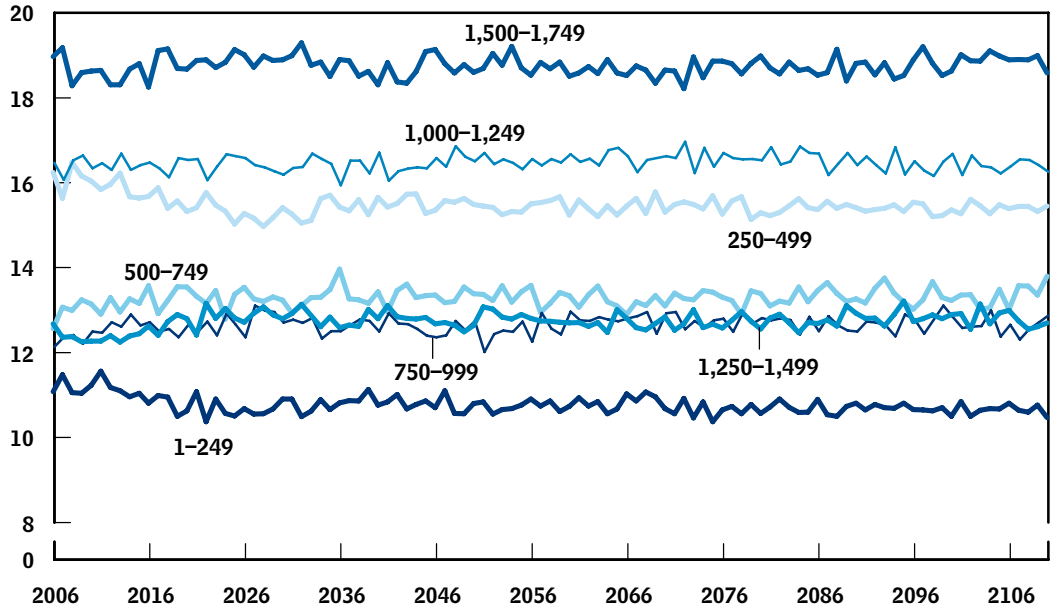
The probability that a person will experience unemployment in a given year depends on his or her demographic characteristics, as in the other labor force equations, but

12. The full set of discrete values for annual hours worked is 125, 375, 625, 875, 1,125, 1,375, and 1,625. Those are the midpoints for the ranges used in the ordered logit estimation.

Figure 8.

Number of Part-Time Hours That Men Worked

(Percent)



Source: Congressional Budget Office.

there is also a cyclical macroeconomic effect. As the overall unemployment rate (a variable determined in the CBOLT macroeconomic model) rises or falls, the unemployment spells across age and sex groups also rise or fall, maintaining consistency between the macroeconomic and microeconomic models. The equation for unemployment also includes a dummy variable for whether the person works full time because middle-aged people who work full time are less likely to have an unemployment spell than those who work part time. For a person with an unemployment spell, the number of annual hours worked is adjusted downward (using the results from equations for full- versus part-time work and part-time hours worked). In the model, the reduction in annual hours for a person who experiences an unemployment spell is based on whether he or she works full time or part time.[13]

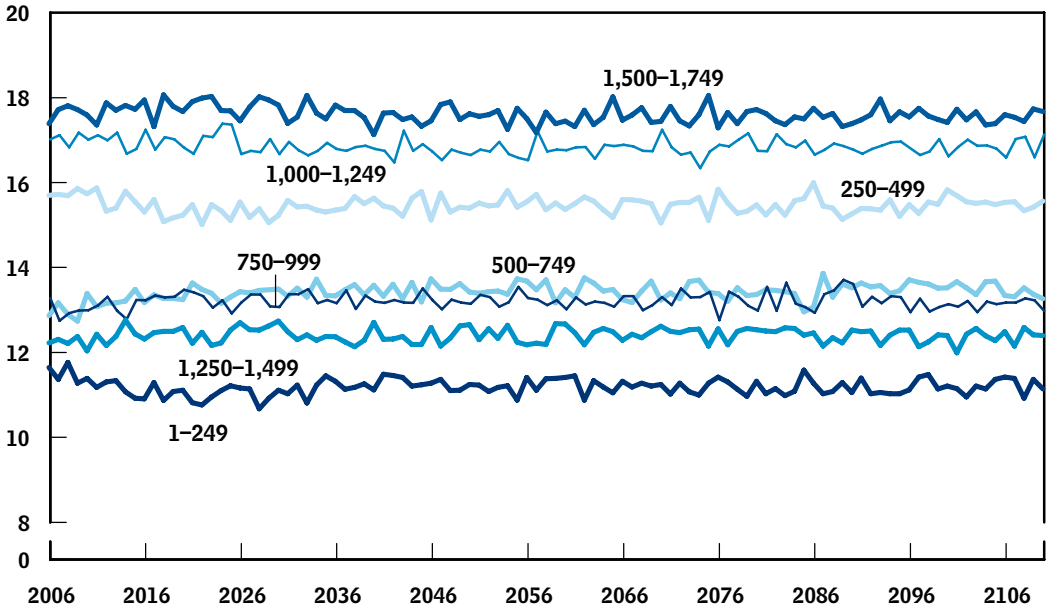
The equations for unemployment spells are age-centered logits (see Table 9 on page 60 for men and Table 10 on page 64 for women). The coefficients on the independent variables are generally as expected: some coefficients are small and insignificant, suggesting weak correlations. For example, being married, having a higher level of education, or being in school all make a person less likely to experience unemployment, but receiving Social Security benefits has only small and variable effects.

13. The fraction of hours lost to unemployment spells has been fairly stable over time—between 30 percent and 40 percent of potential hours worked.

Figure 9.

Number of Part-Time Hours That Women Worked

(Percent)



Source: Congressional Budget Office.

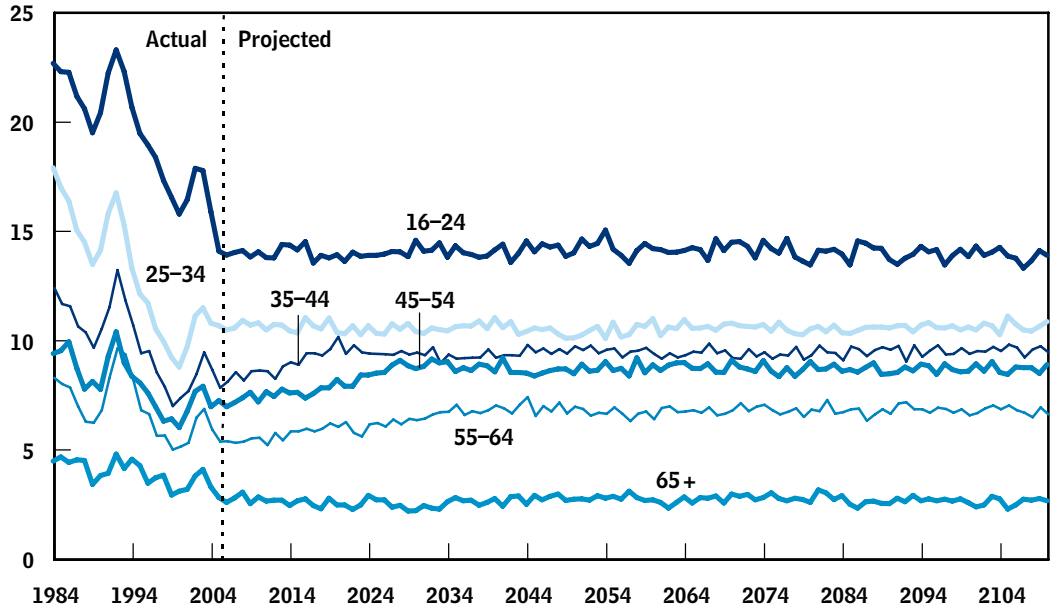
The two sets of coefficients that show up in the unemployment equations, but in none of the other labor force equations are for the aggregate unemployment rate and for the dummy variable for working full time. The combination of constant terms and coefficients on the aggregate unemployment rate across age and sex groups reveals significant information about average and cyclical unemployment across groups: the young always have higher unemployment rates than do the middle-aged, but the unemployment rates for the middle-aged (especially men) are affected more by the state of the macroeconomy, as reflected in larger coefficients on the aggregate unemployment rate. The coefficients on full-time work are used to capture an important correlation in the data: middle-aged people who work full time are much less likely to experience unemployment than middle-aged people who work part time. The effect actually reverses sign for the youngest and oldest age groups, reflecting attachment to the labor force: only middle-aged full-time workers are likely to be so attached to the labor force that they would report themselves as unemployed if they did not currently have a job.

Finally, the equations for unemployment use the same error-correction mechanism as do the equations for full-time and part-time hours. The equations are identical to those described above but include actual earnings as an extra independent variable (see Table C-5 on page 102 for men and Table C-6 on page 106 for women).

Figure 10.

Mean Unemployment Spell for Men, by Age

(Percentage of workers)



Source: Congressional Budget Office.

Projected unemployment incidence in CBOLT shows the differences mentioned before across age groups but shows no cyclical fluctuations (see Figure 10 for men and Figure 11 for women). As age (shown in groups) increases, unemployment rates are uniformly lower for both men and women. However, the baseline CBOLT projections are flatter than those seen historically, and other than a few small secular trends for a couple of age groups that are tied to the demographic variables, there is little movement other than random sampling variability. That observation is attributable to the way in which the model has been solved to produce these graphs. The CBOLT macroeconomic model does not attempt to introduce business-cycle fluctuations into the baseline simulations, although fluctuations are a feature of the stochastic simulations.[14]

Projecting Individual Earnings Outcomes

Many years of data are required to properly isolate the effects of age, sex, education level, and birth cohort on earnings.[15] The method for projecting the number of annual work hours, described in the previous section, is the first step in solving for individual earnings. Realized annual earnings for each person in the microsimulation

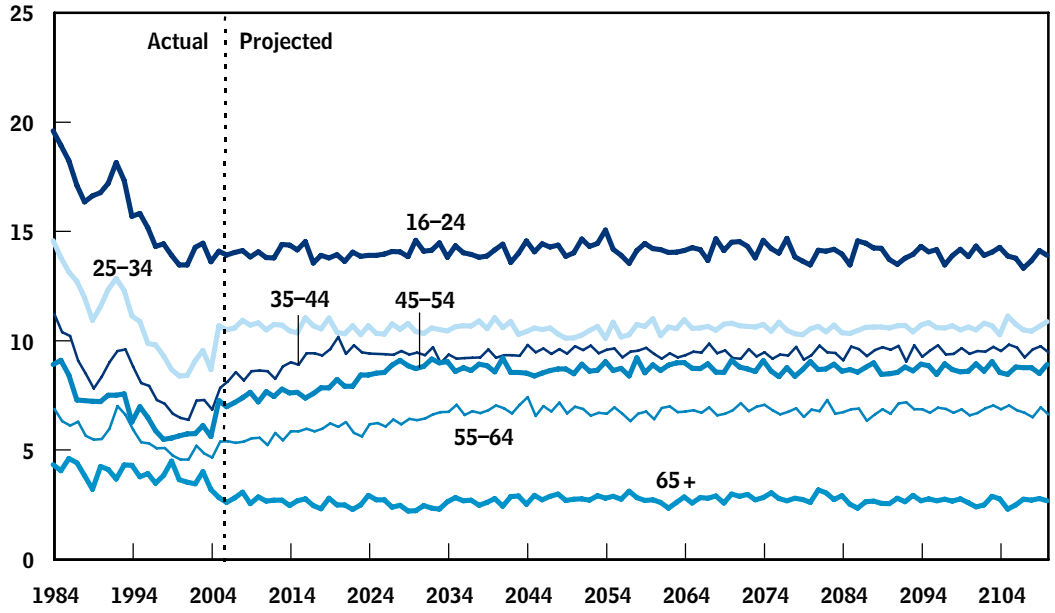
14. See Congressional Budget Office, *Quantifying Uncertainty in the Analysis of Long-Term Social Security Projections*, Background Paper (November 2005).

15. The CBOLT equations are based on about 30 years of data.

Figure 11.

Mean Unemployment Spell for Women, by Age

(Percentage of workers)



Source: Congressional Budget Office.

depend on hours worked, earnings ability, and other factors. The CBOLT strategy of separating the effects of annual hours worked from earnings ability makes it possible to evaluate how a change in behavior (such as an increase in the portion of people working full time) affects individual outcomes.

One direct approach for introducing earnings ability would be to project an hourly wage rate for each person and then to multiply annual hours worked by the hourly wage to solve for total earnings. However, projecting hourly wage rates is problematic because the earnings realized by many individuals are not directly tied to total hours worked. Many individuals are full-time salaried employees or are self-employed, and variability in their earnings is not directly related to changes in hours worked. Therefore, the approach used in CBOLT is to solve for potential or full-time equivalent earnings—the amount that the individual could earn if fully employed throughout the year. In the model, projected FTE earnings are then adjusted for actual hours worked to solve for annual earnings.

The FTE earnings approach used in CBOLT makes it possible to distinguish several factors that independently affect earnings. There are several well-known predictable determinants of earnings associated with observable characteristics, including age, sex, education level, and birth cohort. The data also suggest that earnings patterns change (by more than predicted by the change in hours worked) when people start collecting

Social Security benefits; this effect is generally associated with movement from career jobs to the types of lower-paying jobs that people tend to hold after retirement.

In addition to those observable factors, there are also heterogeneous or unobservable determinants of earnings that are crucial for modeling earnings outcomes. That is, within any given age, sex, education, and cohort group there is a wide range of earnings, and those differences across individuals tend to persist. The statistical procedure used in CBOLT to model those idiosyncratic earnings differentials relies on a combination of permanent and transitory shocks to earnings over time. The variances on those shocks are chosen to generate realistic longitudinal and cross-sectional earnings patterns, the ultimate goal of the earnings microsimulation.

Predictable Earnings Differences Across Groups and Time

CBOLT uses a regression equation to isolate predictable differences in full-time equivalent earnings across age, sex, education, beneficiary status, and birth cohort groups. Before estimating the earnings equations, two important modifications are applied to the data. First, FTE earnings for each person in the data are computed by starting with reported earnings and then adjusting for the hours a person actually worked during the year.[16] That adjustment eliminates much of the age-related earnings variance in the data; people at all ages are put on equivalent footing in terms of hours worked. Second, an average wage adjustment indexes the derived FTE earnings in each year to a common base year. (Simply indexing by price inflation would leave the effect of productivity increases in the data; the goal is to isolate changes associated with age, sex, education, beneficiary status, and birth cohort.)

The algorithm used to measure FTE earnings (which is, in turn, used to estimate the earnings equations) is based on a few simple principles. If a person reported working full time (2,080 hours or more) and experienced no unemployment spell, then his or her FTE earnings are simply set equal to actual earnings. If a person reported working part time, his or her FTE earnings will be greater than actual earnings, because he or she could have earned more if he or she had worked full time. (See Appendix A for more details.) However, the adjustment is not a simple rescaling based on hours worked, because part-time workers receive disproportionately lower earnings than full-time workers. This is often referred to as a full-time wage premium; based on empirical studies, the premium is assumed to be 15 percent for people working fewer

16. This is the reverse of the approach in the model, where given FTE earnings are used to solve for actual earnings and are adjusted for hours worked.

than 1,500 hours per year.[17] There is also an adjustment for unemployment which is quite simple: for example, a person who works full time for half the year and is unemployed the other half of the year is assumed to have FTE earnings exactly double the earnings actually observed.

As noted above, the algorithm for measuring FTE earnings to estimate the earnings equations is basically the reverse of the approach in CBOLT. The model solves the amount a person could earn if he or she worked full time with no unemployment shock (that is, his or her FTE earnings) and then adjusts that potential earnings amount down if annual hours are below full time. Thus, a policy-induced change in annual hours worked affects earnings, but the magnitude of the earnings change depends on whose hours are adjusted, as discussed below.

The groups with the largest differences between actual and FTE earnings are the young (who tend to work part time and have higher unemployment rates) and the old (who tend to work part time). If one simply graphed total earnings by age (without constructing FTE earnings to eliminate the effect of hours worked) then the pattern would exhibit a distinct inverted U-shape where earnings rise rapidly through middle age and then fall off as people pass through usual retirement age. But much of the age-earnings pattern—especially the drop-off for older workers—arises because of systematic variation in hours worked across age groups. Failure to properly control for differences in hours worked could lead to biased projections. For example, if an older worker is projected to delay claiming Social Security benefits for one year, it is reasonable to assume that he or she will continue to work at his or her full-time job, earning a full-time salary, rather than experience the typical reduction in earnings associated with leaving a career job.

In addition to adjusting earnings for hours worked and unemployment, the values in the data file are also adjusted for wage growth over time. But this introduces a new set of consistency problems: average earnings rise over time because of economywide inflation and productivity. The goal of the earnings equations—to isolate stable earnings patterns across groups—requires that the effects of inflation and productivity in the data be eliminated before estimation. Those effects are then added back in during a CBOLT simulation, varying appropriately with the state of the macroeconomy.

Rather than simply adjusting earnings by means of a standard price index, such as the consumer price index for urban wage earners and clerical workers (CPI-W), earnings are adjusted by using overall average earnings growth, computed by using Bureau of

17. The academic literature on the full-time wage premium has identified a range of outcomes that center on the 15 percent used in CBOLT. See, for example, Susan L. Averett and Julie L. Hotchkiss, "Discrimination in the Payment of Full-Time Wage Premiums," *Industrial and Labor Relations Review*, vol. 49, no. 2 (1996), pp. 287–301; and Ronald G. Ehrenberg, Pamela Rosenberg, and Jeanne Li, "Part-Time Employment in the United States," *Employment, Unemployment, and Labor Utilization*, Robert A. Hart, ed. (Boston: Unwin Hyman, 1988), pp. 256–287.

Economic Analysis total wages divided by Bureau of Labor Statistics total number of workers.[18] The resulting wage index is highly correlated with the CPI-W because much of the growth in wages over time is attributable to inflation. However, merely adjusting for CPI-W suggests that $25,000 of earnings in 1993 was worth $32,500 in 2004, but the wage index constructed for the microsimulation model suggests that $25,000 in 1993 was worth $37,000 in 2004. That difference in projected value is consistent with the concept that productivity is also important for comparing earnings over long periods of time.

A relatively simple regression analysis is applied to the wage-indexed FTE earnings to isolate the observable component of earnings differences. Men and women are analyzed separately. For each group, the regressions map out the statistical relationship between average earnings and age for each of the four education groups (less than high school, high school, some college, and college graduate) and then investigates (by birth cohort) how and why those patterns are shifting over time in order to gain insights about the best way to project earnings. The regression equations are estimated using CPS data for 1975 through 2003 for everyone ages 16 to 70 with earnings. The dependent variable is the log of FTE earnings, and the independent variables are a series of interacted age and education dummies, interacted birth cohort and education dummies, and interacted OASDI beneficiary status and education dummies (see Table 11 on page 68 for men and Table 12 on page 70 for women).

Figure 12 for men and Figure 13 for women show how the functional form captures differences across groups. These figures illustrate the earnings patterns that the coefficients in Tables 11 and 12 imply. The four panels in each figure show log age-earnings profiles for an education group; the multiple lines within each education group capture differences across birth cohorts. For each birth cohort, the values of predicted log earnings are shown only for the period during which actual earnings data are observed. For example, the oldest member of the 1970s birth cohort was 33 in 2003, when the historical data end, so that is the last data point shown for that cohort. Similarly, the youngest member of the pre-1940 cohort was 36 in 1975, when the data begin, so that is the first data point shown for that cohort.

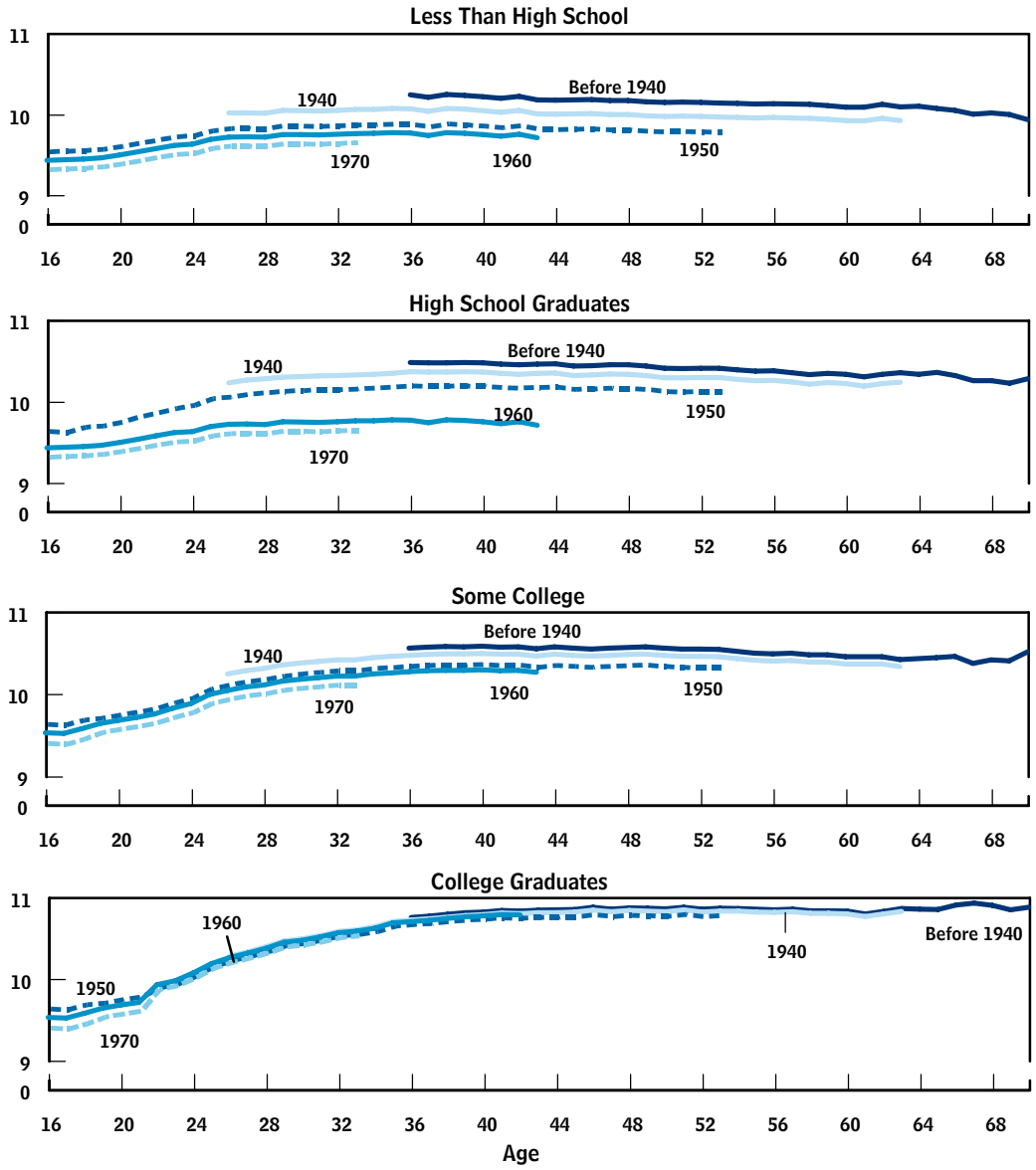
The first notable observation is that lifetime earnings rise markedly with education for every cohort and for both sexes. The education ranking from less than high school to college graduate is as expected: higher education leads to higher earnings over a lifetime. The second observation is that there are marked differences in the slope of the age-earnings profiles across education groups. Average earnings grow significantly

18. This is consistent with a view of economywide productivity growth. The CPI-W is chosen over other price indexes because it is used to determine the annual increases in OASDI monthly benefits. See Social Security Administration, *The 2006 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds* (May 1, 2006), Appendix 3, p. 176.

Figure 12.

Predicted Log Full-Time-Equivalent Earnings for Men, by Education Level, Age, and Birth Cohort

(Indexed to 1993 wage levels)



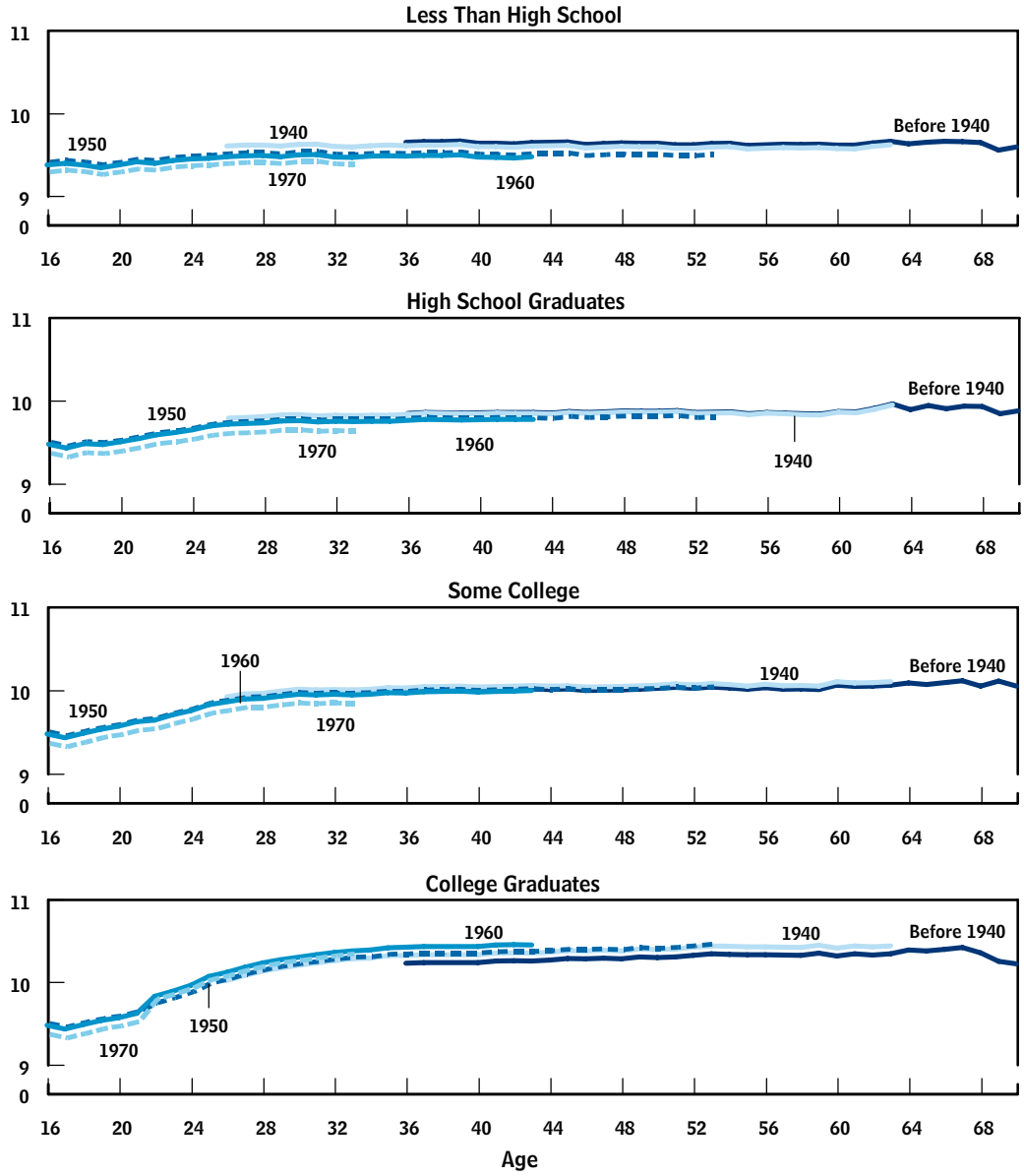
Source: Congressional Budget Office.

Note: Predicted full-time-equivalent earnings are indexed by overall average earnings over time, which makes the comparison across cohorts relative, not absolute. A drop in earnings for younger cohorts at a particular age does not mean that earnings fell in absolute terms; instead, it means that average earnings for that particular age and education group did not keep pace with overall earnings growth over time.

Figure 13.

Predicted Log Full-Time-Equivalent Earnings for Women, by Education Level, Age, and Birth Cohort

(Indexed to 1993 wage levels)



Source: Congressional Budget Office.

Note: Predicted full-time-equivalent earnings are indexed by overall average earnings over time, which makes the comparison across cohorts relative, not absolute. A drop in earnings for younger cohorts at a particular age does not mean that earnings fell in absolute terms; instead, it means that average earnings for that particular age and education group did not keep pace with overall earnings growth over time.

with age for college graduates but much less so for the other groups, especially those who do not finish high school.

The differences in earnings by age and education are straightforward; the shifts across birth cohorts are a bit more subtle. Before explaining those patterns, it is worth remembering that each earnings observation in the data has been indexed by overall average earnings, so they are effectively relative earnings profiles by birth cohort. Thus, when one looks at (for example) men with less than a high school education (top left corner of Figure 12), the drop in earnings by birth cohort is not absolute; it is relative to overall average earnings. Given that framework, the patterns in the figures reveal significant information about historical earnings patterns and have important implications for earnings projections.

One of the most noted features about earnings distributions over the last several decades is a marked increase in the economic benefit of a college education. That is reflected in Figure 12 by stable age-earnings profiles for men and in Figure 13 by rising age-earnings profiles for women for the college-educated across all birth cohorts. For the other education groups, average log earnings are falling compared with the overall average wage, which means that, in effect, the college-educated are gaining.[19] Although economists are not in total agreement, several explanations have been suggested for the shift in relative earnings, including the shift from traditional manufacturing to technology-based employment.[20]

The simple decomposition of earnings differences by age, sex, education, and birth cohort is a useful way to describe historical earnings. It is also a good starting point for projecting earnings differences across groups. One interpretation of the historical data is that the changing demand for education-related skills and the increased participation of women in the labor force have caused a shift in relative earnings over the last few decades. Although there is no reason to expect that pattern to reverse, there is also no reason to expect it to cause any more divergence in relative earnings. Therefore, the CBOLT assumption is that relative earnings across education groups will stabilize at the values for the most recent cohort (in this case, the 1970s). Thus, in the distant future, the only equation-based differences in FTE earnings will be associated with age, sex, and education. In the actual simulations, CBOLT's macroeconomic modules will solve for additional differences in age-earnings profiles across cohorts that are

19. The magnitude of the shift for any education group depends on the wage index used to adjust the data—for example, one could use an index that attempts to explicitly net out age-related wage differences and could get different absolute shifts for any education group. However, any wage index that ultimately varies only by year will lead to the same historical relative shifts across birth and education groups. The key is that, when projecting forward, individual earnings are rescaled by the same index so that the overall average wage is the same as the weighted average across groups.

20. See, for example, Lawrence F. Katz and Kevin M. Murphy, "Changes in Relative Wages, 1963–87: Supply and Demand Factors," *Quarterly Journal of Economics* (1992), pp. 35–78; and David Autor, Lawrence Katz, and Melissa Kearney, "Rising Wage Inequality: The Role of Composition and Prices," National Bureau of Economic Research, Working Paper No. 11628 (2005).

properly associated with differences in inflation and productivity, but those are not attributable to systematic cohort-level shifts.

Idiosyncratic Earnings Differentials

The CBOLT earnings equations described above are closely related to the equations used to study many issues in labor economics, and they share a common drawback in predictive ability. Equations such as these explain only a small fraction of the overall earnings differences across the population. That is, the range of earnings within the identified groups (by age, sex, education, and birth cohort) is larger than differences in average earnings between the identified groups. Those unexplained differences within groups (referred to below as individual heterogeneity) are also persistent; for example, high earners within a particular group in one year are very likely to be high earners in that group in subsequent years.

Incorporating that unobserved but persistent individual heterogeneity into the projections is of first-order importance for microsimulation models. If one ignored the heterogeneity and assigned each individual the group-level expected value from the earnings equation, the range of earnings within each group would be too narrow. This would show up in the projections as compressed cross-sectional earnings distributions. At the other extreme, if each person received the expected value of earnings from the group-level equation, plus some simple annual random error term chosen to capture the range of earnings within the group, there would be too much longitudinal variability in earnings, as people would randomly move (within a group) up and down the earnings distribution. That would show up in the projections as compressed longitudinal earnings distributions, which would not generate enough differences between high and low earners over entire lifetimes.

For each individual in the CBOLT microsimulation, the earnings differential is defined as the gap between actual earnings and the predicted value from the earnings equation; it is the component described as individual heterogeneity. By definition, there are no observable characteristics that help explain those differentials statistically, so the model uses an ad hoc approach to separate the earnings differentials into persistent and transitory components. The ultimate test of any given specification is whether it can generate realistic earnings profiles across the population at any point in time and over time—that is, whether the simulated cross-sectional and longitudinal earnings patterns are consistent with historical patterns.

There are several statistical approaches for modeling the idiosyncratic earnings differentials. One approach often used in empirical labor economics is the fixed-effects model, which relies on longitudinal data to separate an individual error component for each person while the earnings equations are estimated. That is, one would estimate an earnings equation in a way similar to the approach used in CBOLT (with explanatory variables such as age, sex, education, and birth cohort) but would also include an individual error term for each person in the sample. The individual terms can be recovered statistically because the longitudinal data have multiple observations

on the same person. The results of this approach are instructive: the portion of overall earnings variability explained by the earnings equation generally increases from less than 30 percent to more than 70 percent when one adds the individual fixed effect; this increase shows the statistical importance of considering persistence.

The method for modeling idiosyncratic earnings differentials in CBOLT takes the logic of the fixed-effects approach one step further. (See Appendix D for more details about how earnings differentials are modeled in CBOLT.) The starting point for the CBOLT approach is that, under closer inspection, fixed effects seem better characterized as slowly changing rather than as absolutely fixed.[21] That is, a person with high or low earnings within a group at some point in time will tend to keep that earnings position within the group over time, but that position is not absolute. The data suggest it is more appropriate to allow some small permanent shocks to the earnings differentials across individuals in each year rather than to hold those differentials fixed over time for each person.

These slowly evolving permanent differentials capture fundamental differences in earnings ability within age, sex, education, and birth cohort groups but are not sufficient to generate the overall desired amount of earnings variability. As stated above, even the fixed-effects earnings equations explain only 70 percent of earnings variation; 30 percent of the earnings variation is still random. In order to capture this additional variability, each person in the microsimulation also receives an annual transitory earnings shock that captures temporary fluctuations associated with negative factors such as temporary job displacement or positive factors such as annual bonuses. There is also an important overall adding-up constraint that comes into play when simulating the two types of shocks to earnings: at any point in time, the variance of the permanent differentials plus the variance of the transitory shocks must sum to the overall unexplained variance from the underlying earnings equation.

To summarize, in any year, each individual's earnings can be characterized as the sum of three components. The first is the predicted value from the earnings equation; this is the average value for that person's age, sex, education, and birth cohort group. The second is the value of the individual's permanent differential, which measures the long-run gap between that person's earnings and the overall average for the group. The third is a transitory differential, which measures any additional (but temporary) variation in that person's earnings compared with predicted values, using the group-level average plus permanent differential. This characterization of earnings differences

21. This important insight about simulating earnings is indirectly derived from Angus Deaton and Christina Paxson, "Intertemporal Choice and Inequality," *Journal of Political Economy*, vol. 102, no. 3 (1994), pp. 437–467. Those authors observed an increasing range for earnings within any given birth cohort as its members age, and that widening of the earnings distribution is not consistent with constant fixed effects. The pattern is consistent with continuous low-variance shocks to permanent differentials, which is the specification in CBOLT.

across people is sufficient to generate statistically robust patterns of individual earnings through time.

The following explains how each of the three earnings components is assigned in a CBOLT simulation. First, at the beginning of the simulation, consider the individuals in the micro sample who have been working and therefore have some actual earnings history. The equation-based component of earnings can be predicted using the estimated earnings equation, so the difference between those people's actual (reported) earnings and the predicted value is, by definition, the sum of the permanent and transitory shocks. Because, by construction, the expected value of transitory shocks is zero, the gap between actual and predicted earnings is used to estimate the permanent differentials in the year before the beginning of the simulation. After the simulation begins, those individuals receive two annual updates using random numbers. The first is the low-variance shock to their permanent earnings differentials, and the second is the higher-variance transitory shock.

The same annual permanent and transitory shocks are applied to people who have no earnings history at the beginning of the simulation; this includes everyone who has not completed his or her education when the simulation starts.[22] The only modification for those individuals is how the initial permanent earnings differentials are assigned. When earnings differentials for the group with earnings histories are computed, they are stored by the model and used to bootstrap differentials for people entering the work force in later years. That bootstrap approach guarantees that the distribution of earnings differentials for the young population in any given year will always look like the distribution of earnings differentials for the young population at the beginning of the simulation. Thus, other than the predictable dispersion of within-cohort earnings that will occur as a cohort ages, the only shifts in earnings distributions that will occur are associated with predictable group-level movements.

The ultimate tests of whether a particular method for simulating individual earnings is successful involve looking at the properties of the projections. The first set of outcomes to consider is cross-sectional earnings distributions, looking at the behavior of various percentiles of the earnings distribution in the projections (see Figure 14 for the lower half of the earnings distribution and Figure 15 for the top half). The outcomes for every percentile graphed (1st, 5th, 25th, 50th, 75th, 95th, and 99th) evolve smoothly over time. The values are indexed by overall average wage growth, so there is no productivity-related growth built into the percentiles over time, and the lines are generally flat.

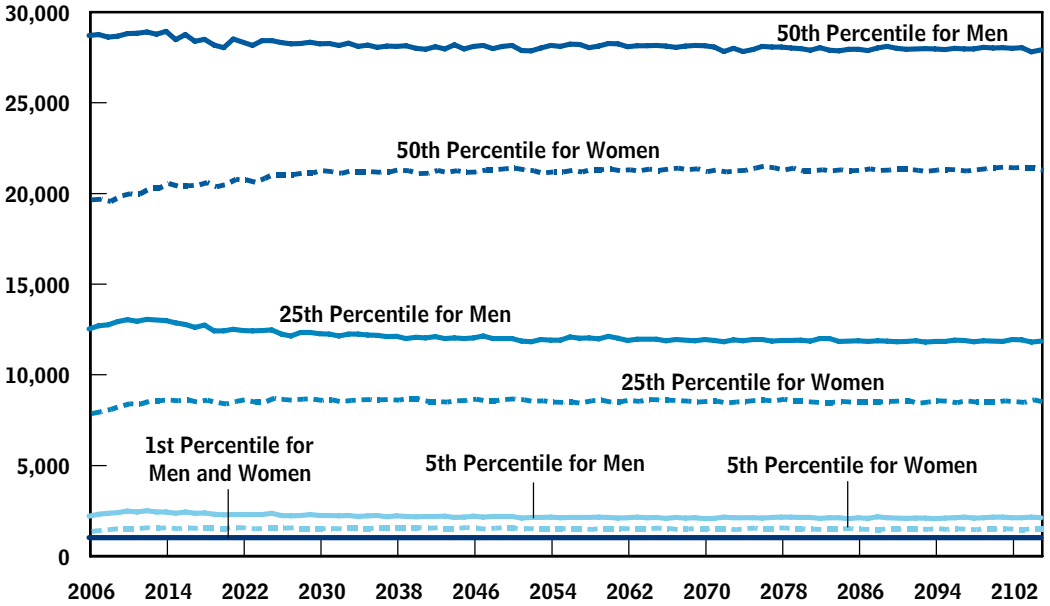
The second set of results that suggest the CBOLT approach generates the appropriate amount of individual heterogeneity comes from cross-tabulations of lifetime versus

22. Individuals do not receive an initial permanent differential until their schooling is completed because the data suggest that using data from before graduation would be inappropriate. Predicted earnings before graduation are from a separate earnings equation with a simple transitory shock.

Figure 14.

Lower Half of the Projected Annual Earnings Distribution

(Annual indexed earnings, in dollars)



Source: Congressional Budget Office.

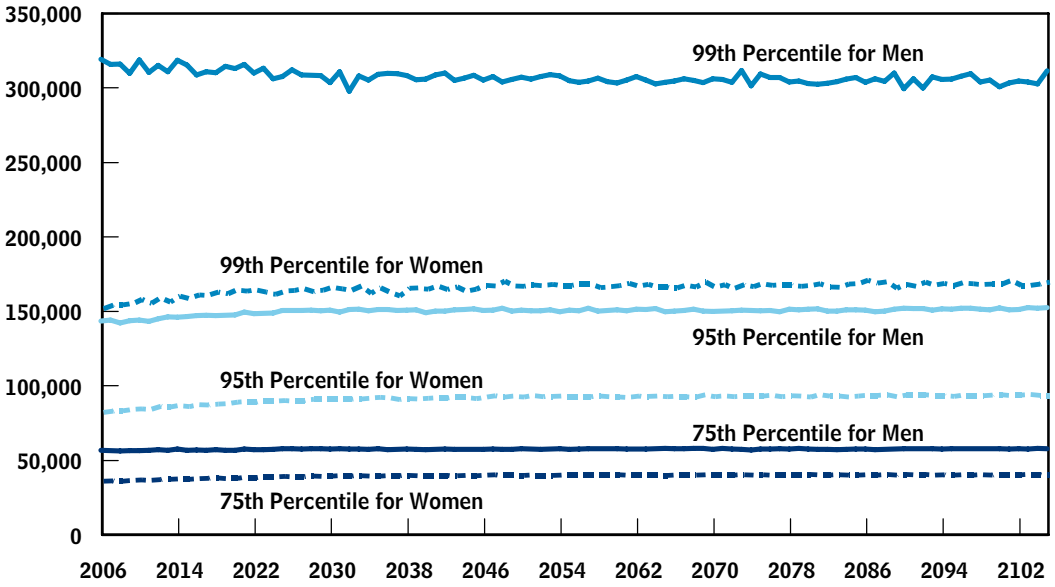
annual earnings (see Table 13 on page 72 for men and Table 14 on page 74 for women). To construct these tables, each person in the microsimulation between ages 50 and 60 is classified first by total lifetime earnings (which determines the column decile) and then by annual earnings (which determines the row deciles). Theoretically, if every person in the 1st decile of lifetime earnings had annual earnings in the 1st decile for every year worked, each person in the 2nd lifetime decile had annual earnings in the 2nd decile for each year worked, and so on, then every diagonal entry would be 10 percent.

In general, the entries on the diagonals are larger than any other, as expected. People who have low lifetime earnings tend to have low earnings in the years they worked, and vice versa. The real question is whether the CBOLT simulation strategy preserves the cross-tabulation through time. The first matrix for both men and women is a tabulation done in 2000. All the data in that matrix constitute history; nothing has been simulated. Moving down the matrices (the calculations are shown for 2010, 2040, and 2070), the portion of earnings that is simulated increases. In 2010, there are about five years of simulated data, by 2040 there are 35 years' worth, and by 2070 all the data are simulated. Other than a slight increase in concentration in the 1st decile, the historical relationship between longitudinal and cross-sectional earnings shows up in the projected data as well.

Figure 15.

Upper Half of the Projected Annual Earnings Distribution

(Annual indexed earnings, in dollars)



Source: Congressional Budget Office.

Table 1.

Labor Force Participation Logit Coefficients for Men

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Lagged Labor Force Participation	Education Level[b]		
			Never Married	Married		High School Graduate	Some College	College Graduate
16	0.3868		0.0506	0.5287				
17	-2.4436		0.1881	0.8676	1.9992			
18	-0.6991		-0.0970	0.2803	2.0191			
19	-0.1404	-0.3290	-0.2751	-0.0748	2.0708			
20	-0.5482	-0.4149	-0.3328	-0.2000	2.1318			
21	-1.1605	-0.5682	-0.3447	-0.2560	2.2344			
22	-1.7496	-0.7656	-0.3101	-0.2930	2.3856			
23	-2.0271	-1.0174	-0.2510	-0.2904	2.5627			
24	-2.0120	-1.2166	-0.2077	-0.2742	2.7343			
25	-3.1034	-1.3564	-0.1289	-0.2137	2.9833	-0.1812	-0.8039	-0.4663
26	-2.5541	-1.4617	-0.0967	-0.1949	3.1267	-0.1806	-0.6602	-0.3897
27	-2.1304	-1.5558	-0.0644	-0.1623	3.2451	-0.1689	-0.5532	-0.3091
28	-1.9183	-1.6095	-0.0589	-0.1392	3.3307	-0.1498	-0.4836	-0.2172
29	-1.7245	-1.6557	-0.0488	-0.1067	3.3982	-0.1221	-0.4238	-0.1286
30	-1.4662	-1.6869	-0.0551	-0.0860	3.4484	-0.0876	-0.3634	-0.0397
31	-1.1955	-1.7152	-0.0534	-0.0563	3.5010	-0.0506	-0.3263	0.0308
32	-0.9594	-1.7249	-0.0598	-0.0337	3.5440	-0.0154	-0.2916	0.0875
33	-0.7384	-1.7511	-0.0731	-0.0138	3.5867	0.0111	-0.2745	0.1258
34	-0.5711	-1.7555	-0.0995	-0.0037	3.6228	0.0301	-0.2627	0.1568
35	-0.4824	-1.7645	-0.1220	0.0018	3.6616	0.0466	-0.2488	0.1813
36	-0.5317	-1.7707	-0.1589	-0.0069	3.6988	0.0611	-0.2191	0.2046
37	-0.7849	-1.7953	-0.1860	-0.0114	3.7469	0.0795	-0.1910	0.2186
38	-1.0816	-1.8223	-0.2021	-0.0001	3.7893	0.1104	-0.1425	0.2372
39	-1.4016	-1.8778	-0.2172	0.0186	3.8445	0.1520	-0.0844	0.2576
40	-1.6604	-1.9570	-0.2252	0.0546	3.9047	0.2010	-0.0121	0.2878
41	-1.9885	-2.0485	-0.2228	0.1008	3.9786	0.2455	0.0559	0.3258
42	-1.8689	-2.1355	-0.2242	0.1505	4.0510	0.2860	0.1210	0.3826
43	-1.6993	-2.2192	-0.2325	0.1925	4.1374	0.3065	0.1700	0.4350
44	-1.4717	-2.2961	-0.2376	0.2328	4.2174	0.3166	0.2180	0.4957
45	-1.0485	-2.3481	-0.2461	0.2712	4.2887	0.3176	0.2521	0.5530
46	-0.5051	-2.3847	-0.2536	0.3044	4.3549	0.3168	0.2811	0.5912
47	0.1940	-2.4344	-0.2472	0.3335	4.4176	0.3087	0.3158	0.6106
48	0.9899	-2.4807	-0.2221	0.3627	4.4673	0.3052	0.3508	0.6381
49	1.6722	-2.5136	-0.2053	0.3718	4.5079	0.2928	0.3532	0.6467
50	2.0126	-2.5350	-0.1825	0.3656	4.5436	0.2707	0.3278	0.6421
51	2.2266	-2.5257	-0.1658	0.3557	4.5607	0.2420	0.2932	0.6329
52	2.6546	-2.4798	-0.1683	0.3366	4.5704	0.2226	0.2441	0.6199
53	3.1588	-2.4193	-0.1786	0.3107	4.5794	0.1981	0.1846	0.5766
54	4.0216	-2.3520	-0.1656	0.2979	4.5876	0.1747	0.1470	0.5296
55	4.6451	-2.2923	-0.1636	0.2836	4.5915	0.1512	0.1240	0.4682
56	5.3027	-2.2616	-0.1504	0.2663	4.6056	0.1252	0.0993	0.4009
57	6.0619	-2.2355	-0.1226	0.2505	4.6125	0.0878	0.0854	0.3400
58	6.4266	-2.2286	-0.0990	0.2307	4.6184	0.0520	0.0821	0.2766

In School	Trend	Birth Cohort (By first year of cohort) 1910	1920	1930	1940	1950	1960	1970	1980
-0.8492	**-0.0269**							0.0318	**0.1484**
-0.7664	**-0.0053**							-0.0120	0.0344
-1.0256	**0.0063**							0.0256	-0.0152
-1.2168	**0.0167**							0.0047	**-0.1361**
-1.2837	**0.0221**							-0.0237	**-0.2059**
-1.3392	**0.0144**						**0.0899**	**0.1547**	
-1.4132	**0.0189**						0.0354	**0.0767**	
-1.4628	**0.0181**						0.0241	0.0545	
-1.4331	**0.0153**						0.0043	0.0258	
	0.0032						-0.0425	0.0006	
	0.0027						-0.0438	-0.0147	
	0.0023						-0.0484	-0.0231	
	0.0023						-0.0503	-0.0333	
	0.0007						-0.0383	-0.0126	
	-0.0009						-0.0222	0.0099	
	-0.0013					0.0238	0.0053		
	-0.0025					0.0330	0.0206		
	-0.0020					0.0340	0.0009		
	-0.0001					0.0273	-0.0405		
	0.0021					0.0183	-0.0907		
	0.0035					-0.0007	**-0.1340**		
	0.0029					-0.0075	**-0.1454**		
	0.0012					-0.0148	**-0.1387**		
	-0.0019					-0.0129	-0.1107		
	-0.0053					-0.0152	-0.0753		
	-0.0111				0.0731	0.0760			
	-0.0112				0.0817	0.0628			
	-0.0105				0.0770	0.0390			
	-0.0080				0.0447	-0.0228			
	-0.0050				-0.0059	-0.0874			
	-0.0023				-0.0811	-0.1668			
	-0.0025				**-0.1168**	**-0.1797**			
	-0.0044				**-0.1204**	-0.1596			
	-0.0070				-0.1011	-0.1156			
	-0.0093				-0.0704	-0.0801			
	-0.0140			0.0852	0.0647				
	-0.0147			0.0832	0.0808				
	-0.0136			0.0702	0.0611				
	-0.0105			0.0332	-0.0101				
	-0.0078			0.0019	-0.0666				
	-0.0074			-0.0016	-0.0586				
	-0.0087			0.0147	-0.0114				
	-0.0097			0.0239	0.0363				

Continued

Table 1.

Continued

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Lagged Labor Force Participation	Education Level[b]		
			Never Married	Married		High School Graduate	Some College	College Graduate
59	**8.0803**	**-2.2193**	-0.1098	**0.1901**	**4.6114**	0.0184	0.0685	**0.2342**
60	**10.3859**	**-2.1222**	**-0.1778**	**0.1097**	**4.5638**	0.0115	0.0675	**0.2298**
61	**-2.1910**	**-2.0667**	-0.0191	0.0988	**4.4960**	0.0071	0.1453	**0.3357**
62	**-2.4327**	**-1.8866**	-0.1567	-0.0175	**4.1583**	**0.1339**	**0.3705**	**0.6057**
63	**-2.1126**	**-1.8534**	0.0910	0.0069	**4.1248**	0.0627	**0.3005**	**0.4086**
64	**-2.3710**	**-1.5620**	0.2693	0.0689	**4.2919**	0.1167	0.1616	**0.3119**
65	**-3.0146**	**-0.9181**	0.1224	-0.0282	**4.1361**	-0.0208	**0.1654**	**0.4631**
66	**-2.9498**	**-1.0086**	0.1709	0.0916	**4.4131**	0.0963	**0.2740**	**0.4356**
67	**-1.0472**	**-0.9192**	0.1076	0.0469	**4.6233**	**0.1337**	**0.2906**	**0.3598**
68	**-1.2480**	**-0.8801**	0.0804	-0.0049	**4.7275**	**0.1273**	**0.2620**	**0.3626**
69	**-2.2449**	**-0.8140**	0.1321	-0.0114	**4.7989**	**0.1089**	**0.2778**	**0.4100**
70	**-0.6508**	**-0.4580**	**0.1630**	**-0.0770**	**5.2289**	**0.0977**	**0.2798**	**0.4649**

Source: Congressional Budget Office.

Note: Coefficient values shown in bold indicate statistical significance at the 5 percent level.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

In School	Trend	Birth Cohort (By first year of cohort) 1910	1920	1930	1940	1950	1960	1970	1980
	-0.0130			0.0637	0.1569				
	-0.0187			**0.1691**	**0.3611**				
	0.0020		**-0.2374**	-0.2593					
	0.0016		-0.1079	-0.0595					
	0.0011		-0.0690	0.0927					
	0.0013		-0.0844	0.0938					
	0.0231		-0.0198	0.0184					
	0.0058		0.1286	0.3200					
	0.0044		0.0194	0.2478					
	0.0157		-0.1262	-0.0133					
	0.0148		-0.1068	-0.0224					
	0.0104	-0.0897	-0.0705						

Table 2.

Labor Force Participation Logit Coefficients for Women

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Lagged Labor Force Participation	Education Level[b]		
			Never Married	Married		High School Graduate	Some College	College Graduate
16	-0.5744		0.2264	-0.0652				
17	-2.8524		0.0272	-0.3723	2.1646			
18	-1.2497		0.0253	-0.3720	2.1728			
19	-1.1164	-0.2270	-0.0720	-0.4057	2.2570			
20	-1.4851	-0.2792	-0.0952	-0.4198	2.3820			
21	-1.9782	-0.3639	-0.1026	-0.4268	2.5347			
22	-2.4001	-0.4773	-0.0641	-0.4212	2.7289			
23	-2.3654	-0.6071	-0.0209	-0.4165	2.9349			
24	-2.0286	-0.7132	0.0211	-0.4116	3.1207			
25	-2.5743	-0.7161	-0.0788	-0.4816	3.2064	0.4476	0.3373	0.6889
26	-2.0627	-0.7555	-0.0270	-0.4931	3.3402	0.4408	0.4419	0.6905
27	-1.7486	-0.8016	0.0021	-0.5069	3.4568	0.4374	0.4966	0.6958
28	-1.6406	-0.8450	0.0101	-0.5212	3.5531	0.4321	0.5126	0.6961
29	-1.5497	-0.8682	0.0046	-0.5298	3.6406	0.4331	0.5171	0.6967
30	-1.5676	-0.8816	-0.0023	-0.5316	3.7173	0.4387	0.5232	0.6973
31	-2.2292	-0.8994	-0.0086	-0.5266	3.7984	0.4420	0.5216	0.6943
32	-2.1872	-0.8932	-0.0219	-0.5201	3.8740	0.4495	0.5184	0.6949
33	-2.1355	-0.8880	-0.0343	-0.5148	3.9478	0.4544	0.5186	0.6985
34	-2.0291	-0.8825	-0.0455	-0.5150	4.0191	0.4518	0.5188	0.6963
35	-1.8033	-0.8743	-0.0489	-0.5166	4.0909	0.4450	0.5143	0.6915
36	-1.6244	-0.8718	-0.0495	-0.5207	4.1597	0.4396	0.5144	0.6801
37	-1.4958	-0.8859	-0.0466	-0.5239	4.2296	0.4362	0.5163	0.6710
38	-1.3666	-0.8999	-0.0444	-0.5271	4.2987	0.4373	0.5189	0.6666
39	-1.5013	-0.9213	-0.0357	-0.5248	4.3622	0.4457	0.5283	0.6777
40	-1.6290	-0.9561	-0.0331	-0.5238	4.4222	0.4576	0.5414	0.6976
41	-2.2630	-0.9797	-0.0377	-0.5228	4.4797	0.4675	0.5536	0.7258
42	-2.2005	-1.0073	-0.0463	-0.5176	4.5323	0.4701	0.5673	0.7577
43	-1.9504	-1.0262	-0.0569	-0.5068	4.5812	0.4709	0.5803	0.7856
44	-1.6513	-1.0414	-0.0750	-0.5080	4.6315	0.4699	0.5907	0.8025
45	-1.3123	-1.0425	-0.0922	-0.5091	4.6791	0.4729	0.6039	0.8204
46	-0.9224	-1.0552	-0.1040	-0.5162	4.7221	0.4746	0.6136	0.8301
47	-0.6196	-1.0541	-0.1134	-0.5280	4.7636	0.4777	0.6153	0.8260
48	-0.4184	-1.0691	-0.1158	-0.5432	4.8011	0.4729	0.6079	0.8139
49	-0.2496	-1.0789	-0.1146	-0.5440	4.8349	0.4626	0.5945	0.8031
50	-0.1002	-1.0825	-0.1127	-0.5429	4.8675	0.4457	0.5748	0.7836
51	-0.3063	-1.0740	-0.1130	-0.5349	4.9023	0.4286	0.5497	0.7640
52	-0.0434	-1.0840	-0.1142	-0.5312	4.9326	0.4081	0.5174	0.7375
53	0.3137	-1.0855	-0.1249	-0.5322	4.9632	0.3948	0.4876	0.7057
54	0.8432	-1.0897	-0.1374	-0.5427	4.9942	0.3811	0.4531	0.6555
55	1.2630	-1.1149	-0.1542	-0.5592	5.0267	0.3698	0.4178	0.5956
56	1.7236	-1.1601	-0.1614	-0.5670	5.0535	0.3512	0.3868	0.5223
57	2.1024	-1.1816	-0.1608	-0.5764	5.0807	0.3302	0.3538	0.4550
58	2.4058	-1.2105	-0.1560	-0.5866	5.1115	0.3025	0.3140	0.3693

In School	Number of Children Under Age 6	Trend	Birth Cohort (By first year of cohort)							
			1910	1920	1930	1940	1950	1960	1970	1980
-0.3025	-0.1307	-0.0164							0.1052	0.2018
-0.3721	-0.1454	-0.0014							-0.0144	0.0490
-0.6273	-0.2657	0.0088							-0.0310	-0.0572
-0.7594	-0.3797	0.0173							-0.0700	-0.1650
-0.8255	-0.4566	0.0214							-0.0914	-0.2250
-0.8913	-0.4969	0.0141						0.0910	0.0720	
-0.9759	-0.5238	0.0136						0.1044	0.1020	
-1.0470	-0.5270	0.0121						0.1283	0.1300	
-1.0652	-0.5153	0.0113						0.1343	0.1171	
	-0.4370	0.0091						0.1070	0.0114	
	-0.4387	0.0144						0.0504	-0.1059	
	-0.4372	0.0215						-0.0282	-0.2518	
	-0.4367	0.0266						-0.0910	-0.3544	
	-0.4369	0.0295						-0.1377	-0.4136	
	-0.4348	0.0300						-0.1558	-0.4225	
	-0.4357	0.0085					0.2441	0.2290		
	-0.4373	0.0086					0.2363	0.2100		
	-0.4385	0.0094					0.2226	0.1798		
	-0.4398	0.0109					0.1945	0.1341		
	-0.4424	0.0145					0.1428	0.0425		
	-0.4415	0.0190					0.0773	-0.0662		
	-0.4405	0.0224					0.0252	-0.1459		
	-0.4320	0.0248					-0.0150	-0.2060		
	-0.4182	0.0255					-0.0401	-0.2380		
	-0.4051	0.0246					-0.0473	-0.2301		
	-0.3870	0.0101				0.1479	0.1912			
	-0.3664	0.0106				0.1394	0.1616			
	-0.3531	0.0119				0.1299	0.1190			
	-0.3446	0.0148				0.1045	0.0570			
	-0.3234	0.0187				0.0628	-0.0277			
	-0.3053	0.0223				0.0200	-0.0995			
	-0.2908	0.0258				-0.0240	-0.1652			
	-0.2764	0.0286				-0.0712	-0.2213			
	-0.2564	0.0282				-0.0875	-0.2289			
	-0.2538	0.0258				-0.0768	-0.1914			
	-0.2592	0.0153			0.0856	0.0860				
	-0.2405	0.0133			0.0897	0.1016				
	-0.2313	0.0117			0.0842	0.1017				
	-0.2251	0.0122			0.0555	0.0660				
	-0.2141	0.0122			0.0332	0.0426				
		0.0121			0.0020	0.0154				
		0.0114			-0.0131	0.0111				
		0.0099			-0.0157	0.0313				

Continued

Table 2.

Continued

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Lagged Labor Force Participation	Education Level[b]		
			Never Married	Married		High School Graduate	Some College	College Graduate
59	**3.3000**	**-1.2014**	-0.1257	**-0.5755**	**5.1565**	**0.2814**	**0.2772**	**0.3212**
60	**4.0249**	**-1.2188**	-0.0964	**-0.5498**	**5.1679**	**0.2703**	**0.2903**	**0.2983**
61	**-2.9748**	**-1.1576**	-0.0462	**-0.6244**	**5.1191**	**0.2685**	**0.2221**	**0.3324**
62	**-2.8245**	**-1.3052**	**-0.3809**	**-0.6206**	**4.8496**	**0.1254**	**0.2260**	**0.1901**
63	**-2.7286**	**-1.2539**	0.0309	**-0.5292**	**4.8552**	0.0301	**0.2221**	-0.0371
64	**-3.1729**	**-1.0665**	-0.1495	**-0.3908**	**5.1340**	**0.1571**	**0.2323**	0.0702
65	**-3.4676**	**-0.6440**	-0.1251	**-0.2738**	**4.7672**	**0.1960**	**0.3370**	**0.2022**
66	**-3.3812**	**-0.8147**	-0.0748	**-0.4126**	**4.9536**	0.1365	0.1896	0.1179
67	**-3.3176**	**-0.6579**	0.0617	**-0.3422**	**5.1845**	**0.1109**	**0.2066**	**0.2288**
68	**-0.6947**	**-0.5913**	0.0469	**-0.3054**	**5.2627**	**0.1075**	**0.2054**	**0.2606**
69	**-0.1994**	**-0.5446**	0.0710	**-0.2843**	**5.3515**	**0.0949**	**0.1761**	**0.2510**
70	**0.6105**	**-0.4191**	**0.3538**	**-0.1277**	**5.9402**	**0.1393**	**0.2544**	**0.2825**

Source: Congressional Budget Office.

Note: Coefficient values shown in bold indicate statistical significance at the 5 percent level.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

In School	Number of Children Under Age 6	Trend	Birth Cohort (By first year of cohort) 1910	1920	1930	1940	1950	1960	1970	1980
		0.0064			0.0118	0.1121				
		0.0026			0.0132	0.1654				
		0.0138		-0.0566	-0.0456					
		0.0221		-0.1667	-0.2928					
		0.0211		-0.0916	-0.1256					
		0.0087		0.0954	0.2323					
		0.0211		-0.0642	-0.0839					
		0.0376		-0.2482	-0.3191					
		0.0249		-0.1095	-0.0915					
		0.0234		-0.0747	-0.0526					
		0.0228		-0.0703	-0.0327					
		0.0270	-0.0256	-0.1704						

Table 3.

Full-Time Employment Logit Coefficients for Men

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]		
			Never Married	Married	High School Graduate	Some College	College Graduate
16	0.8361	-0.5055	-1.2518	1.4020			
17	-9.4944	-0.5162	-1.3899	0.4878			
18	-9.5507	-0.8498	-0.9485	0.4530			
19	-6.1952	-1.1394	-0.8213	0.4078			
20	-4.5609	-1.3267	-0.7583	0.3658			
21	-4.0055	-1.4807	-0.7408	0.3607			
22	-3.4304	-1.6213	-0.6975	0.3616			
23	-2.8853	-1.7608	-0.6413	0.3769			
24	-2.5591	-1.8653	-0.5677	0.4072			
25	-4.3279	-1.9555	-0.3773	0.5238	0.4700	-0.4178	-0.3713
26	-3.4478	-1.9675	-0.3377	0.5358	0.5160	-0.1583	-0.1265
27	-2.3402	-1.9609	-0.3033	0.5521	0.5556	0.0650	0.1006
28	-1.3383	-1.9400	-0.2771	0.5700	0.5839	0.2373	0.2964
29	-0.6626	-1.9291	-0.2618	0.5867	0.5994	0.3696	0.4423
30	-0.3702	-1.9040	-0.2616	0.6000	0.6146	0.4788	0.5577
31	0.0839	-1.9407	-0.2566	0.6222	0.6330	0.5657	0.6570
32	0.2587	-1.9613	-0.2650	0.6368	0.6436	0.6290	0.7351
33	0.4718	-1.9843	-0.2760	0.6469	0.6533	0.6763	0.7917
34	0.7500	-1.9979	-0.2848	0.6585	0.6598	0.7139	0.8365
35	1.0103	-1.9951	-0.2899	0.6649	0.6613	0.7368	0.8714
36	1.2379	-1.9486	-0.3068	0.6534	0.6560	0.7524	0.8985
37	1.4378	-1.9133	-0.3200	0.6486	0.6551	0.7637	0.9260
38	1.5635	-1.8733	-0.3293	0.6465	0.6533	0.7649	0.9509
39	1.6044	-1.8554	-0.3415	0.6369	0.6580	0.7571	0.9746
40	1.5836	-1.8832	-0.3572	0.6330	0.6647	0.7531	0.9990
41	2.0026	-1.9463	-0.3546	0.6335	0.6840	0.7649	1.0257
42	2.0907	-2.0114	-0.3519	0.6378	0.6879	0.7612	1.0250
43	2.0519	-2.1046	-0.3556	0.6320	0.6863	0.7685	1.0283
44	1.9815	-2.1903	-0.3526	0.6376	0.6687	0.7731	1.0174
45	1.9114	-2.2384	-0.3375	0.6365	0.6484	0.7689	0.9976
46	2.0342	-2.2770	-0.3345	0.6320	0.6255	0.7463	0.9720
47	2.3397	-2.3260	-0.3308	0.6246	0.6033	0.7217	0.9559
48	2.7010	-2.3660	-0.3203	0.6304	0.5817	0.6820	0.9315
49	3.1416	-2.4132	-0.3226	0.6202	0.5598	0.6354	0.9019
50	3.6060	-2.4779	-0.3337	0.6138	0.5326	0.5857	0.8652
51	4.5203	-2.5226	-0.3345	0.5930	0.5117	0.5626	0.8497
52	5.0292	-2.5427	-0.3257	0.5758	0.4743	0.5128	0.7968
53	5.5408	-2.5494	-0.3154	0.5466	0.4341	0.4624	0.7257
54	6.0328	-2.5492	-0.2800	0.5233	0.3964	0.4160	0.6570
55	6.4746	-2.5529	-0.2403	0.4914	0.3584	0.3697	0.5824
56	6.8068	-2.5860	-0.1971	0.4587	0.3232	0.3259	0.4964
57	7.2041	-2.6165	-0.1698	0.4177	0.2834	0.2847	0.4111
58	7.1648	-2.6331	-0.1384	0.3721	0.2456	0.2488	0.3387

In School	Birth Cohort (By first year of cohort)							
	1910	1920	1930	1940	1950	1960	1970	1980
-3.1369							-0.6746	-0.1528
-1.4402							-0.1302	0.0443
-1.6019							0.0766	0.1764
-1.8451							0.1829	0.2719
-1.9011							0.2243	0.3058
-1.9108						0.1439	0.3841	
-1.8944						0.1530	0.3880	
-1.8908						0.1658	0.3845	
-1.8547						0.1625	0.3511	
						0.0399	0.1405	
						0.0498	0.1440	
						0.0543	0.1483	
						0.0538	0.1451	
						0.0538	0.1405	
						0.0513	0.1253	
					-0.1360	-0.0313		
					-0.1557	-0.0431		
					-0.1654	-0.0474		
					-0.1705	-0.0511		
					-0.1706	-0.0486		
					-0.1670	-0.0406		
					-0.1590	-0.0316		
					-0.1547	-0.0238		
					-0.1421	-0.0115		
					-0.1309	-0.0037		
				-0.1852	-0.2128			
				-0.1673	-0.1799			
				-0.1486	-0.1456			
				-0.1218	-0.1125			
				-0.1014	-0.0794			
				-0.1026	-0.0604			
				-0.1130	-0.0518			
				-0.1214	-0.0469			
				-0.1320	-0.0387			
				-0.1410	-0.0320			
			-0.1683	-0.2158				
			-0.1813	-0.2104				
			-0.1929	-0.2045				
			-0.2031	-0.2056				
			-0.2121	-0.2084				
			-0.2170	-0.2066				
			-0.2220	-0.2108				
			-0.2289	-0.2130				

Continued

Table 3.

Continued

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]		
			Never Married	Married	High School Graduate	Some College	College Graduate
59	**6.5310**	**-2.6888**	**-0.1195**	**0.3218**	**0.2156**	**0.2211**	**0.2686**
60	**5.5311**	-2.7513	-0.0942	**0.2779**	**0.1861**	**0.1971**	**0.2039**
61	**1.6522**	-2.8598	-0.0668	**0.2376**	**0.1666**	**0.1793**	**0.1696**
62	**1.6510**	-2.7980	-0.0377	**0.2063**	**0.1510**	**0.1644**	**0.1502**
63	**1.6318**	-2.7519	0.0079	**0.1821**	**0.1428**	**0.1546**	**0.1436**
64	**1.5835**	-2.6924	0.0677	**0.1596**	**0.1287**	**0.1411**	**0.1540**
65	**1.5199**	-2.6299	0.1274	**0.1222**	**0.1221**	**0.1297**	**0.1844**
66	**1.4541**	-2.5891	**0.1777**	**0.0737**	**0.1279**	**0.1404**	**0.2156**
67	**3.0651**	-2.4657	**0.2335**	0.0154	**0.1380**	**0.1570**	**0.2577**
68	**3.1336**	-2.3337	**0.2419**	-0.0483	**0.1442**	**0.1710**	**0.3008**
69	**2.5228**	-2.2057	**0.2355**	**-0.0975**	**0.1606**	**0.1928**	**0.3358**
70	0.5933	-1.7113	-0.0017	**-0.1726**	**0.2620**	**0.3001**	**0.4679**

Source: Congressional Budget Office.

Note: Coefficient values shown in bold indicate statistical significance at the 5 percent level.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

In School	Birth Cohort (By first year of cohort)							
	1910	1920	1930	1940	1950	1960	1970	1980
			-0.2365	-0.2053				
			-0.2390	-0.1916				
		-0.1551	-0.2929					
		-0.1650	-0.2641					
		-0.1606	-0.1967					
		-0.1369	-0.0785					
		-0.0899	0.0877					
		-0.0267	0.2592					
		0.0258	0.3781					
		0.0700	0.4710					
		0.1110	0.5257					
	0.0941	0.2856						

Table 4.

Full-Time Employment Logit Coefficients for Women

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]		
			Never Married	Married	High School Graduate	Some College	College Graduate
16	-0.3538	-0.3074	-0.4023	-2.0725			
17	-15.9217	-0.2636	-0.2992	-1.1484			
18	-11.4091	-0.7018	-0.1178	-0.4702			
19	-7.1667	-1.1017	-0.0657	-0.3348			
20	-5.6061	-1.2455	-0.1142	-0.3032			
21	-4.9146	-1.3307	-0.1456	-0.2955			
22	-4.1933	-1.3371	-0.1802	-0.2709			
23	-3.4201	-1.3302	-0.2093	-0.2266			
24	-2.6357	-1.2723	-0.2271	-0.1655			
25	-3.1840	-1.1437	-0.2571	-0.1716	0.4802	0.1765	0.3771
26	-1.9403	-1.0182	-0.3025	-0.1117	0.4714	0.3331	0.5169
27	-0.7692	-0.9373	-0.3455	-0.0438	0.4614	0.4220	0.6334
28	0.0734	-0.8862	-0.3967	0.0135	0.4465	0.4624	0.7052
29	0.5929	-0.8338	-0.4524	0.0524	0.4313	0.4754	0.7390
30	0.8236	-0.7850	-0.5087	0.0782	0.4065	0.4664	0.7377
31	0.6060	-0.7694	-0.5620	0.0950	0.3652	0.4285	0.6967
32	0.6155	-0.7383	-0.6189	0.1098	0.3324	0.3953	0.6525
33	0.6037	-0.7129	-0.6622	0.1287	0.2953	0.3488	0.5921
34	0.6014	-0.7145	-0.7006	0.1535	0.2580	0.2991	0.5212
35	0.5689	-0.7304	-0.7308	0.1772	0.2304	0.2584	0.4592
36	0.5143	-0.7448	-0.7593	0.1920	0.2098	0.2267	0.4072
37	0.4548	-0.7816	-0.7818	0.2020	0.1999	0.2049	0.3673
38	0.3886	-0.8240	-0.8052	0.2076	0.2057	0.2005	0.3432
39	0.2645	-0.8618	-0.8215	0.2116	0.2209	0.2084	0.3363
40	0.1454	-0.9022	-0.8357	0.2133	0.2320	0.2156	0.3310
41	-0.2053	-0.9459	-0.8397	0.2163	0.2300	0.2087	0.3096
42	-0.2653	-0.9861	-0.8391	0.2158	0.2354	0.2171	0.3059
43	-0.3071	-1.0274	-0.8360	0.2121	0.2385	0.2257	0.3074
44	-0.3064	-1.0786	-0.8319	0.1939	0.2377	0.2343	0.3105
45	-0.2512	-1.1161	-0.8235	0.1798	0.2494	0.2486	0.3278
46	-0.1377	-1.1433	-0.8157	0.1667	0.2651	0.2653	0.3491
47	0.0437	-1.1677	-0.8090	0.1567	0.2807	0.2787	0.3692
48	0.2653	-1.1902	-0.7963	0.1461	0.2934	0.2857	0.3907
49	0.5069	-1.2071	-0.7866	0.1527	0.3081	0.2896	0.4106
50	0.7216	-1.2360	-0.7815	0.1612	0.3122	0.2941	0.4182
51	1.0089	-1.2556	-0.7744	0.1751	0.3069	0.2948	0.4312
52	1.2776	-1.2836	-0.7679	0.1880	0.3048	0.2949	0.4380
53	1.5865	-1.3172	-0.7678	0.1948	0.2987	0.2991	0.4342
54	1.8926	-1.3430	-0.7621	0.1916	0.2846	0.2984	0.4185
55	2.1394	-1.3623	-0.7519	0.1819	0.2714	0.2907	0.3988
56	2.4551	-1.4283	-0.7407	0.1777	0.2606	0.2868	0.3684
57	2.7855	-1.5343	-0.7407	0.1559	0.2522	0.2849	0.3386
58	2.8005	-1.7122	-0.7430	0.1347	0.2502	0.2784	0.3078

In School	Number of Children Under Age 6	Birth Cohort (By first year of cohort)							
		1910	1920	1930	1940	1950	1960	1970	1980
-2.1415	0.1250							-0.0003	0.4279
-1.0545	-0.0183							-0.1403	0.1386
-1.4249	-0.3499							-0.0618	0.1619
-1.6314	-0.4899							0.0295	0.2112
-1.6370	-0.5523							0.0610	0.2033
-1.6170	-0.5830						0.0919	0.1840	
-1.5787	-0.6060						0.1189	0.1940	
-1.5615	-0.6286						0.1512	0.2103	
-1.5344	-0.6458						0.1768	0.2174	
	-0.6227						0.1534	0.1161	
	-0.6218						0.1827	0.1561	
	-0.6193						0.2056	0.1955	
	-0.6102						0.2242	0.2360	
	-0.5974						0.2392	0.2720	
	-0.5773						0.2497	0.2948	
	-0.5565					0.2640	0.4680		
	-0.5307					0.2715	0.4717		
	-0.5066					0.2733	0.4667		
	-0.4790					0.2681	0.4521		
	-0.4528					0.2579	0.4322		
	-0.4302					0.2469	0.4076		
	-0.4121					0.2383	0.3822		
	-0.3942					0.2302	0.3571		
	-0.3812					0.2265	0.3369		
	-0.3682					0.2260	0.3216		
	-0.3539				0.2058	0.4111			
	-0.3374				0.2093	0.3983			
	-0.3209				0.2149	0.3893			
	-0.3013				0.2198	0.3804			
	-0.2858				0.2205	0.3707			
	-0.2595				0.2230	0.3628			
	-0.2428				0.2276	0.3594			
	-0.2232				0.2278	0.3565			
	-0.2091				0.2276	0.3530			
	-0.2025				0.2283	0.3486			
	-0.2008			0.0938	0.3330				
	-0.2102			0.0734	0.3064				
	-0.2200			0.0465	0.2767				
	-0.2197			0.0188	0.2523				
	-0.1966			-0.0043	0.2372				
				-0.0224	0.2214				
				-0.0280	0.2110				
				-0.0288	0.2083				

Continued

Table 4.

Continued

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]		
			Never Married	Married	High School Graduate	Some College	College Graduate
59	**2.3461**	**-1.9225**	**-0.7517**	**0.1045**	**0.2548**	**0.2741**	**0.2770**
60	**1.4716**	**-2.1005**	**-0.7657**	0.0706	**0.2566**	**0.2749**	**0.2481**
61	**0.9991**	**-2.1958**	**-0.7741**	0.0417	**0.2635**	**0.2873**	**0.2406**
62	**1.0228**	**-2.2273**	**-0.7606**	0.0302	**0.2567**	**0.2761**	**0.2078**
63	**1.0364**	**-2.2501**	**-0.7334**	0.0282	**0.2392**	**0.2646**	**0.1856**
64	**1.0116**	**-2.2495**	**-0.6865**	0.0393	**0.2222**	**0.2648**	**0.1942**
65	**0.9524**	**-2.2288**	**-0.6213**	0.0567	**0.2147**	**0.2631**	**0.2147**
66	**0.8680**	**-2.2154**	**-0.5513**	0.0715	**0.2064**	**0.2678**	**0.2524**
67	**2.4817**	**-2.1367**	**-0.4916**	0.0989	**0.2046**	**0.2780**	**0.3057**
68	**3.1728**	**-2.0339**	**-0.4251**	**0.1391**	**0.2102**	**0.2983**	**0.3429**
69	**3.0272**	**-1.9287**	**-0.3677**	**0.1866**	**0.2072**	**0.3001**	**0.3458**
70	**-1.2909**	**-1.7590**	**-0.1242**	**0.3972**	**0.2062**	**0.2451**	**0.2368**

Source: Congressional Budget Office.

Note: Coefficient values shown in bold indicate statistical significance at the 5 percent level.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

In School	Number of Children Under Age 6	Birth Cohort (By first year of cohort)							
		1910	1920	1930	1940	1950	1960	1970	1980
				-0.0253	**0.2017**				
				-0.0227	**0.1848**				
			-0.0422	0.0159					
			-0.0409	0.0063					
			-0.0224	0.0197					
			0.0165	**0.0659**					
			0.0582	**0.1472**					
			0.1131	**0.2516**					
			0.1596	**0.3490**					
			0.1974	**0.4388**					
			0.2254	**0.5126**					
		0.2494	**0.5337**						

Table 5.

Full-Time or Part-Time Employment Persistence for Men, by Age Group

(Percent)

Work Status at (t-1)	Work Status at (t)			Work Status at (t)		
	Not Working at (t)	Part Time at (t)	Full Time at (t)	Not Working at (t)	Part Time at (t)	Full Time at (t)
	Ages 16 to 24			Ages 25 to 34		
t=2000						
Not Working at (t-1)	19.9	9.0	5.5	10.6	0.3	5.7
Part Time at (t-1)	5.0	22.4	10.9	0.8	4.3	5.5
Full Time at (t-1)	2.6	4.7	20.2	3.9	5.4	63.5
t=2050						
Not Working at (t-1)	21.3	8.9	5.3	13.4	0.3	5.4
Part Time at (t-1)	4.8	19.3	9.7	0.8	3.7	4.7
Full Time at (t-1)	3.0	3.4	24.3	4.1	4.7	62.9
t=2100						
Not Working at (t-1)	21.7	8.9	5.2	13.7	0.3	5.3
Part Time at (t-1)	4.7	19.4	9.6	0.7	3.7	4.7
Full Time at (t-1)	2.9	3.3	24.5	4.1	4.7	62.8
	Ages 35 to 44			Ages 45 to 54		
t=2000						
Not Working at (t-1)	7.9	0.1	3.2	11.9	0.2	2.6
Part Time at (t-1)	0.3	1.6	2.7	0.4	1.7	2.4
Full Time at (t-1)	2.6	3.1	78.4	1.7	3.1	76.0
t=2050						
Not Working at (t-1)	11.0	0.2	2.8	14.5	0.2	2.0
Part Time at (t-1)	0.5	2.0	3.0	0.6	2.2	2.8
Full Time at (t-1)	2.4	3.3	74.9	1.6	3.4	72.6
t=2100						
Not Working at (t-1)	11.6	0.2	2.8	14.4	0.3	1.9
Part Time at (t-1)	0.5	2.0	3.0	0.6	2.4	2.8
Full Time at (t-1)	2.5	3.3	74.2	1.7	3.5	72.5
	Ages 55 to 64			Ages 65 and Older		
t=2000						
Not Working at (t-1)	22.1	0.8	2.1	71.2	1.2	1.1
Part Time at (t-1)	1.8	5.0	3.5	2.7	7.5	3.0
Full Time at (t-1)	2.8	6.5	55.3	2.1	3.9	7.2
t=2050						
Not Working at (t-1)	25.0	0.9	1.5	71.5	1.2	0.9
Part Time at (t-1)	2.3	5.8	4.1	2.5	8.1	2.9
Full Time at (t-1)	3.2	6.7	50.5	2.0	3.6	7.3
t=2100						
Not Working at (t-1)	25.6	0.9	1.5	73.4	1.2	0.9
Part Time at (t-1)	2.2	6.1	4.2	2.4	7.8	2.8
Full Time at (t-1)	3.0	6.8	49.7	1.8	3.3	6.4

Source: Congressional Budget Office.

Table 6.

Full-Time or Part-Time Employment Persistence for Women, by Age Group

(Percent)

Work Status at (t-1)	Work Status at (t)			Work Status at (t)		
	Not Working at (t)	Part Time at (t)	Full Time at (t)	Not Working at (t)	Part Time at (t)	Full Time at (t)
	Ages 16 to 24			Ages 25 to 34		
t=2000						
Not Working at (t-1)	19.6	9.4	3.0	16.7	1.5	4.1
Part Time at (t-1)	4.4	32.9	10.2	1.9	15.7	7.9
Full Time at (t-1)	1.4	5.0	14.1	3.2	8.7	40.3
t=2050						
Not Working at (t-1)	21.4	8.9	2.7	18.4	1.4	3.9
Part Time at (t-1)	3.9	29.0	10.2	1.6	12.9	6.9
Full Time at (t-1)	1.6	4.0	18.5	3.4	7.6	43.8
t=2100						
Not Working at (t-1)	21.4	8.9	2.7	18.4	1.4	3.9
Part Time at (t-1)	3.9	29.1	10.3	1.6	12.8	6.9
Full Time at (t-1)	1.6	3.9	18.2	3.5	7.5	43.9
	Ages 35 to 44			Ages 45 to 54		
t=2000						
Not Working at (t-1)	18.4	1.0	3.6	20.1	0.7	2.7
Part Time at (t-1)	1.2	13.5	7.6	0.9	11.9	7.0
Full Time at (t-1)	2.6	8.3	43.8	2.4	7.7	46.6
t=2050						
Not Working at (t-1)	20.0	0.9	3.3	21.7	0.7	2.5
Part Time at (t-1)	1.3	13.6	7.3	1.2	12.5	6.8
Full Time at (t-1)	2.7	7.5	43.5	2.5	7.3	44.9
t=2100						
Not Working at (t-1)	19.7	1.0	3.3	21.2	0.7	2.4
Part Time at (t-1)	1.3	13.7	7.3	1.1	13.0	6.8
Full Time at (t-1)	2.7	7.5	43.5	2.4	7.2	45.1
	Ages 55 to 64			Ages 65 and Older		
t=2000						
Not Working at (t-1)	32.1	1.0	1.7	82.6	0.5	0.3
Part Time at (t-1)	1.9	13.4	5.2	1.7	6.8	1.5
Full Time at (t-1)	2.7	7.3	34.7	1.0	1.9	3.7
t=2050						
Not Working at (t-1)	34.8	1.0	1.6	81.3	0.5	0.2
Part Time at (t-1)	2.3	13.9	4.9	1.7	7.2	1.6
Full Time at (t-1)	2.7	6.7	32.0	1.1	1.9	4.5
t=2100						
Not Working at (t-1)	33.6	1.1	1.5	82.5	0.5	0.2
Part Time at (t-1)	2.4	14.5	4.9	1.6	6.9	1.5
Full Time at (t-1)	2.8	6.6	32.7	1.1	1.6	4.1

Source: Congressional Budget Office.

Table 7.

Part-Time Hours Ordered Logit Coefficients for Men

Age Group	Age Coefficient	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School	Trend
			Never Married	Married	High School Graduate	Some College	College Graduate		
16		-0.1376	0.6166	0.7352				**-0.7623**	**-0.0139**
17	**0.4898**	**-0.1691**	-0.1496	**0.7636**				**-0.3245**	**-0.0151**
18	**0.3213**	**-0.2197**	**-0.4439**	**0.6621**				**-0.5763**	**-0.0066**
19	**0.2037**	**-0.2989**	**-0.4319**	**0.6801**				**-0.7184**	0.0026
20	**0.1524**	**-0.3651**	**-0.4296**	**0.5609**				**-0.7449**	**0.0085**
21	**0.1192**	**-0.4508**	**-0.4523**	**0.4882**				**-0.7341**	**0.0038**
22	**0.0917**	**-0.5555**	**-0.4591**	**0.3919**				**-0.7225**	**0.0067**
23	**0.0680**	**-0.6882**	**-0.4595**	**0.2865**				**-0.7302**	**0.0096**
24	**0.0572**	**-0.8179**	**-0.4368**	**0.2092**				**-0.6892**	**0.0115**
25	**0.0912**	**-0.9659**	**-0.2304**	**0.2449**	**0.2926**	**-0.4008**	-0.4919		0.0046
26	**0.0652**	**-1.1098**	**-0.2129**	**0.1766**	**0.2724**	**-0.2987**	**-0.4599**		0.0058
27	**0.0446**	**-1.2022**	**-0.1711**	**0.1491**	**0.2555**	**-0.2118**	**-0.4216**		0.0060
28	**0.0301**	**-1.2143**	**-0.1355**	**0.1404**	**0.2462**	**-0.1496**	**-0.3709**		0.0048
29	**0.0230**	**-1.2059**	**-0.1015**	**0.1424**	**0.2428**	**-0.0961**	**-0.3121**		0.0021
30	**0.0271**	**-1.2056**	**-0.0867**	**0.1583**	**0.2302**	-0.0562	**-0.2405**		-0.0003
31	**0.0195**	**-1.2283**	**-0.0774**	**0.1685**	**0.2127**	-0.0340	**-0.1797**		0.0022
32	**0.0087**	**-1.2276**	**-0.0856**	**0.1684**	**0.1953**	-0.0204	**-0.1218**		0.0040
33	-0.0020	**-1.2337**	**-0.0893**	**0.1696**	**0.1832**	-0.0205	-0.0719		0.0071
34	-0.0123	**-1.2052**	**-0.1035**	**0.1724**	**0.1720**	-0.0233	-0.0231		0.0073
35	**-0.0137**	**-1.1578**	**-0.1048**	**0.1765**	**0.1636**	-0.0221	0.0152		0.0057
36	**-0.0109**	**-1.1104**	**-0.1012**	**0.1843**	**0.1677**	0.0014	0.0649		0.0028
37	-0.0087	**-1.0834**	**-0.0908**	**0.1940**	**0.1680**	0.0305	**0.1068**		-0.0001
38	-0.0028	**-1.1012**	-0.0810	**0.1997**	**0.1646**	0.0653	**0.1411**		-0.0036
39	-0.0048	**-1.1602**	-0.0692	**0.2025**	**0.1480**	0.0945	**0.1620**		-0.0022
40	-0.0083	**-1.2310**	-0.0696	**0.2004**	**0.1288**	**0.0953**	**0.1712**		0.0011
41	-0.0034	**-1.2911**	-0.0801	**0.1972**	**0.0928**	0.0581	**0.1541**		0.0004
42	-0.0034	**-1.3466**	-0.0874	**0.1997**	0.0701	0.0189	**0.1431**		0.0021
43	-0.0086	**-1.3411**	-0.0971	**0.1985**	0.0623	-0.0237	**0.1599**		0.0039
44	-0.0148	**-1.3289**	-0.1002	**0.1940**	0.0713	-0.0713	**0.1866**		0.0051
45	-0.0169	**-1.3125**	-0.1039	**0.1917**	0.0716	**-0.1022**	**0.2078**		0.0048
46	-0.0178	**-1.3132**	-0.1024	**0.1896**	0.0778	**-0.1041**	**0.2332**		0.0040
47	**-0.0155**	**-1.2898**	-0.1045	**0.1811**	**0.0812**	**-0.1032**	**0.2552**		0.0026
48	**-0.0158**	**-1.2954**	**-0.1204**	**0.1812**	0.0576	**-0.0989**	**0.2475**		0.0013
49	**-0.0169**	**-1.2835**	**-0.1428**	**0.1795**	0.0318	-0.0825	**0.2354**		-0.0008
50	**-0.0163**	**-1.2833**	**-0.1679**	**0.1666**	0.0225	-0.0668	**0.2286**		-0.0041
51	**-0.0309**	**-1.2273**	**-0.1844**	**0.1525**	0.0174	-0.0612	**0.2172**		0.0014
52	**-0.0402**	**-1.2383**	**-0.1991**	**0.1277**	0.0102	-0.0632	**0.1946**		0.0000
53	**-0.0480**	**-1.2449**	**-0.1785**	**0.0997**	0.0196	-0.0636	**0.1555**		-0.0004
54	**-0.0563**	**-1.2544**	**-0.1351**	0.0789	0.0228	-0.0676	**0.1079**		-0.0003
55	**-0.0627**	**-1.2442**	-0.0839	0.0644	0.0102	-0.0802	0.0465		0.0006
56	**-0.0637**	**-1.2575**	-0.0431	0.0487	-0.0042	**-0.0967**	-0.0239		0.0010
57	**-0.0639**	**-1.1969**	-0.0135	0.0485	-0.0222	**-0.1035**	**-0.0868**		0.0001
58	**-0.0445**	**-0.9137**	-0.0223	0.0424	-0.0405	**-0.1078**	**-0.1390**		-0.0020

Birth Cohort (By first year of cohort)								Part-Time Category Threshold					
1910	1920	1930	1940	1950	1960	1970	1980	1	2	3	4	5	6
						-0.0113	0.1725	-1.2580	0.3056	1.1911	1.8890	3.0190	3.9287
						0.0433	**0.2246**	6.2598	7.7319	8.5322	9.1870	10.2075	11.0979
						0.0685	**0.1522**	2.9811	4.4644	5.2403	5.8400	6.8042	7.6382
						0.0625	0.0508	0.8790	2.3816	3.1551	3.7281	4.6568	5.4454
						0.0354	-0.0331	-0.0279	1.4776	2.2483	2.8087	3.7178	4.4848
					0.1020	**0.1927**		-0.6529	0.8555	1.6216	2.1706	3.0641	3.8179
					0.0719	**0.1455**		-1.2195	0.2816	1.0403	1.5808	2.4636	3.2123
					0.0456	**0.0878**		-1.7272	-0.2469	0.5045	1.0445	1.9189	2.6643
					0.0047	0.0099		-1.9178	-0.4829	0.2558	0.7985	1.6654	2.4060
					-0.0533	-0.0462		-1.0891	0.2841	1.0083	1.5647	2.4401	3.1907
					-0.0735	-0.0950		-1.6601	-0.3369	0.3724	0.9392	1.8143	2.5604
					-0.0765	-0.1147		-2.1202	-0.8316	-0.1329	0.4431	1.3184	2.0541
					-0.0650	-0.1090		-2.4459	-1.1851	-0.4959	0.0834	0.9602	1.6831
					-0.0417	-0.0672		-2.6188	-1.3680	-0.6831	-0.1001	0.7789	1.4893
					-0.0298	-0.0172		-2.4820	-1.2220	-0.5400	0.0372	0.9169	1.6152
				-0.0854	-0.1297			-2.7265	-1.4660	-0.7847	-0.2101	0.6695	1.3581
				-0.1382	**-0.1995**			-3.0661	-1.8122	-1.1284	-0.5577	0.3183	0.9998
				-0.1887	**-0.2875**			-3.4043	-2.1577	-1.4718	-0.9038	-0.0379	0.6401
				-0.1947	**-0.3056**			-3.7232	-2.4939	-1.8081	-1.2482	-0.3875	0.2928
				-0.1674	**-0.2703**			-3.7322	-2.5341	-1.8461	-1.2884	-0.4299	0.2559
				-0.1091	**-0.1891**			-3.5729	-2.4033	-1.7168	-1.1644	-0.3083	0.3813
				-0.0593	-0.1143			-3.4471	-2.2928	-1.6153	-1.0659	-0.2122	0.4791
				-0.0109	-0.0340			-3.2118	-2.0659	-1.3900	-0.8413	0.0168	0.7092
				-0.0257	-0.0482			-3.2618	-2.1207	-1.4454	-0.8918	-0.0391	0.6550
				-0.0691	-0.0981			-3.3852	-2.2411	-1.5650	-1.0063	-0.1639	0.5277
			0.0579	-0.0318				-3.1923	-2.0375	-1.3614	-0.7963	0.0363	0.7287
			0.0451	-0.0682				-3.2075	-2.0590	-1.3720	-0.8038	0.0188	0.7158
			0.0279	-0.1026				-3.4052	-2.2768	-1.5865	-1.0172	-0.2062	0.4934
			-0.0092	-0.1375				-3.6661	-2.5571	-1.8705	-1.3035	-0.4933	0.2051
			-0.0383	-0.1397				-3.7554	-2.6581	-1.9778	-1.4185	-0.6113	0.0902
			-0.0556	-0.1232				-3.7813	-2.6994	-2.0202	-1.4657	-0.6594	0.0432
			-0.0683	-0.0925				-3.6832	-2.5972	-1.9309	-1.3794	-0.5680	0.1336
			-0.0786	-0.0604				-3.7259	-2.6257	-1.9753	-1.4226	-0.6064	0.0964
			-0.0518	-0.0026				-3.7936	-2.6928	-2.0512	-1.4925	-0.6791	0.0261
			-0.0083	0.0759				-3.7864	-2.6962	-2.0617	-1.4948	-0.6765	0.0271
		-0.0733	-0.1094					-4.5286	-3.4501	-2.8271	-2.2603	-1.4313	-0.7288
		-0.0750	-0.0824					-5.0173	-3.9638	-3.3419	-2.7732	-1.9406	-1.2422
		-0.0887	-0.0827					-5.4321	-4.4123	-3.7845	-3.2191	-2.3831	-1.6881
		-0.1090	-0.1091					-5.9012	-4.8969	-4.2649	-3.7082	-2.8666	-2.1759
		-0.1338	-0.1377					-6.2703	-5.2720	-4.6428	-4.0923	-3.2487	-2.5618
		-0.1444	-0.1488					-6.3495	-5.3547	-4.7245	-4.1724	-3.3357	-2.6538
		-0.1357	-0.1272					-6.3682	-5.3801	-4.7564	-4.2055	-3.3717	-2.6930
		-0.1045	-0.0587					-5.2642	-4.2721	-3.6576	-3.1067	-2.2716	-1.5943

Continued

Table 7.

Continued

Age Group	Age Coefficient	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School	Trend
			Never Married	Married	High School Graduate	Some College	College Graduate		
59	**-0.0299**	**-0.7985**	-0.0335	0.0396	-0.0590	**-0.1222**	**-0.1843**		-0.0025
60	**-0.0212**	**-0.7799**	-0.0370	0.0360	**-0.0680**	**-0.1356**	**-0.2170**		-0.0026
61	c	**-0.8117**	-0.0267	0.0315	**-0.0765**	**-0.1420**	**-0.2337**		0.0018
62	c	**-0.8187**	0.0151	0.0230	**-0.0772**	**-0.1444**	**-0.2415**		0.0036
63	c	**-0.8577**	0.0631	0.0089	**-0.0753**	**-0.1443**	**-0.2356**		0.0071
64	c	**-0.8795**	0.0948	-0.0157	**-0.0663**	**-0.1326**	**-0.2299**		**0.0106**
65	c	**-0.8793**	0.1202	-0.0320	-0.0548	**-0.1129**	**-0.2129**		**0.0145**
66	c	**-0.8828**	0.1300	-0.0471	-0.0412	**-0.0978**	**-0.1974**		**0.0171**
67	**-0.0216**	**-0.8447**	0.1023	-0.0591	-0.0240	-0.0787	**-0.1736**		**0.0246**
68	**-0.0220**	**-0.7958**	0.0909	-0.0518	0.0003	-0.0494	**-0.1429**		**0.0226**
69	**-0.0200**	**-0.7414**	0.0801	-0.0399	0.0177	-0.0260	**-0.1198**		**0.0196**
70	**-0.0140**	**-0.5012**	0.1251	-0.0067	**0.0894**	-0.0260	-0.0862		**0.0116**

Source: Congressional Budget Office.

Note: Coefficient values shown in bold indicate statistical significance at the 5 percent level. Statistical significance of the threshold values is not evaluated.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

c. Terms do not appear for ages 61 to 66 in order to isolate the effects of eligibility for Social Security retirement benefits at those ages.

Birth Cohort (By first year of cohort)								Part-Time Category Threshold					
1910	1920	1930	1940	1950	1960	1970	1980	1	2	3	4	5	6
		-0.0637	0.0151					-4.3995	-3.4062	-2.7934	-2.2386	-1.3964	-0.7199
		-0.0150	0.0808					-3.8692	-2.8818	-2.2655	-1.7038	-0.8488	-0.1698
	-0.0213	-0.0061						-2.5460	-1.5663	-0.9472	-0.3810	0.4899	1.1744
	-0.0275	0.0167						-2.5254	-1.5492	-0.9226	-0.3523	0.5387	1.2351
	-0.0502	0.0062						-2.4969	-1.5339	-0.9027	-0.3286	0.5823	1.2826
	-0.0745	-0.0189						-2.4742	-1.5240	-0.8933	-0.3158	0.6133	1.3178
	-0.1034	-0.0544						-2.4260	-1.4851	-0.8542	-0.2786	0.6628	1.3712
	-0.1071	-0.0534						-2.3714	-1.4408	-0.8106	-0.2375	0.7180	1.4297
	-0.1846	**-0.1878**						-3.7030	-2.7835	-2.1571	-1.5847	-0.6203	0.0865
	-0.1590	-0.1321						-3.6619	-2.7468	-2.1213	-1.5534	-0.5882	0.1220
	-0.1185	-0.0565						-3.4626	-2.5507	-1.9262	-1.3643	-0.4020	0.3149
-0.0727	-0.0122							-2.8073	-1.9126	-1.2951	-0.7519	0.2021	0.9362

Table 8.

Part-Time Hours Ordered Logit Coefficients for Women

Age Group	Age Coefficient	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School	Number of Children Under Age 6	Trend
			Never Married	Married	High School Graduate	Some College	College Graduate			
16		**-0.2109**	-0.7481	-0.3690				**-0.8626**	-0.0050	-0.0018
17	**0.5345**	**-0.1252**	**-0.4888**	-0.0185				**-0.3530**	**-0.0729**	-0.0049
18	**0.3252**	**-0.1816**	**-0.4320**	-0.1435				**-0.5469**	**-0.1750**	0.0037
19	**0.2097**	**-0.2441**	**-0.3593**	-0.1077				**-0.6331**	**-0.2639**	**0.0121**
20	**0.1622**	**-0.2772**	**-0.3376**	**-0.1273**				**-0.6369**	**-0.3099**	**0.0161**
21	**0.1307**	**-0.3297**	**-0.3338**	**-0.1407**				**-0.6185**	**-0.3218**	**0.0105**
22	**0.0991**	**-0.3817**	**-0.3069**	**-0.1616**				**-0.5992**	**-0.3265**	**0.0139**
23	**0.0722**	**-0.4427**	**-0.2527**	**-0.1683**				**-0.6055**	**-0.3263**	**0.0168**
24	**0.0481**	**-0.4862**	**-0.1930**	**-0.1709**				**-0.5889**	**-0.3219**	**0.0187**
25	**0.0509**	**-0.4866**	**-0.1675**	**-0.1903**	**0.2219**	0.0226	**0.1029**		**-0.2996**	**0.0167**
26	**0.0217**	**-0.5047**	**-0.1176**	**-0.2120**	**0.1959**	**0.1065**	**0.1366**		**-0.2998**	**0.0184**
27	-0.0005	**-0.5149**	**-0.0736**	**-0.2298**	**0.1726**	**0.1506**	**0.1764**		**-0.3063**	**0.0205**
28	**-0.0129**	**-0.5277**	-0.0502	**-0.2602**	**0.1515**	**0.1573**	**0.1977**		**-0.3097**	**0.0230**
29	**-0.0189**	**-0.5369**	-0.0371	**-0.2929**	**0.1272**	**0.1449**	**0.1911**		**-0.3090**	**0.0257**
30	**-0.0207**	**-0.5161**	-0.0369	**-0.3211**	**0.1090**	**0.1309**	**0.1688**		**-0.3102**	**0.0281**
31	-0.0045	**-0.4990**	-0.0387	**-0.3535**	**0.0812**	**0.1041**	**0.1286**		**-0.3073**	**0.0149**
32	-0.0054	**-0.4870**	-0.0365	**-0.3867**	**0.0673**	**0.0808**	**0.0950**		**-0.3030**	**0.0174**
33	-0.0056	**-0.4672**	-0.0290	**-0.4109**	**0.0593**	**0.0655**	**0.0718**		**-0.3020**	**0.0205**
34	-0.0061	**-0.4652**	-0.0312	**-0.4319**	**0.0590**	**0.0605**	**0.0596**		**-0.3057**	**0.0233**
35	**-0.0073**	**-0.4818**	-0.0283	**-0.4511**	**0.0617**	**0.0508**	0.0479		**-0.3038**	**0.0261**
36	-0.0048	**-0.4982**	-0.0182	**-0.4619**	**0.0708**	0.0435	0.0399		**-0.3019**	**0.0275**
37	-0.0032	**-0.5180**	-0.0108	**-0.4694**	**0.0799**	0.0400	0.0357		**-0.3002**	**0.0277**
38	0.0000	**-0.5423**	-0.0030	**-0.4687**	**0.0864**	0.0354	0.0256		**-0.2954**	**0.0260**
39	0.0052	**-0.5440**	0.0044	**-0.4625**	**0.1005**	0.0315	0.0175		**-0.2854**	**0.0237**
40	**0.0097**	**-0.5501**	0.0089	**-0.4503**	**0.1162**	0.0335	0.0197		**-0.2843**	**0.0216**
41	**0.0201**	**-0.5637**	-0.0068	**-0.4402**	**0.1226**	0.0397	0.0224		**-0.2883**	**0.0128**
42	**0.0215**	**-0.5667**	-0.0305	**-0.4313**	**0.1216**	0.0489	0.0204		**-0.2884**	**0.0121**
43	**0.0190**	**-0.5804**	-0.0593	**-0.4337**	**0.1229**	**0.0599**	0.0288		**-0.2950**	**0.0123**
44	**0.0145**	**-0.6050**	-0.0637	**-0.4309**	**0.1123**	**0.0659**	0.0401		**-0.3085**	**0.0132**
45	**0.0103**	**-0.6170**	-0.0553	**-0.4249**	**0.1056**	**0.0796**	**0.0579**		**-0.3178**	**0.0140**
46	0.0062	**-0.6187**	-0.0231	**-0.4179**	**0.1086**	**0.0926**	**0.0834**		**-0.3287**	**0.0139**
47	0.0024	**-0.6187**	0.0192	**-0.4060**	**0.1156**	**0.0943**	**0.1122**		**-0.3457**	**0.0131**
48	-0.0010	**-0.6161**	0.0628	**-0.3886**	**0.1188**	**0.0973**	**0.1367**		**-0.3576**	**0.0121**
49	-0.0020	**-0.6206**	0.0737	**-0.3829**	**0.1248**	**0.1010**	**0.1520**		**-0.3605**	**0.0115**
50	-0.0018	**-0.6259**	0.0653	**-0.3866**	**0.1201**	**0.0968**	**0.1538**		**-0.3561**	**0.0113**
51	-0.0006	**-0.6305**	0.0539	**-0.3905**	**0.1069**	**0.0882**	**0.1415**		**-0.3274**	**0.0095**
52	-0.0050	**-0.6575**	0.0353	**-0.3957**	**0.0955**	**0.0858**	**0.1261**		**-0.3052**	**0.0100**
53	**-0.0106**	**-0.6736**	0.0081	**-0.4008**	**0.0882**	**0.0739**	**0.1021**		**-0.2629**	**0.0098**
54	**-0.0188**	**-0.6878**	-0.0075	**-0.4067**	**0.0812**	0.0609	**0.0830**		**-0.2360**	**0.0106**
55	**-0.0259**	**-0.7177**	-0.0168	**-0.4138**	**0.0733**	0.0415	0.0593		**-0.2016**	**0.0104**
56	**-0.0295**	**-0.7365**	-0.0557	**-0.4165**	**0.0688**	0.0214	0.0390			**0.0092**
57	**-0.0290**	**-0.7260**	-0.0953	**-0.4282**	**0.0612**	-0.0043	0.0096			0.0075
58	**-0.0185**	**-0.6707**	**-0.1174**	**-0.4356**	**0.0535**	-0.0206	-0.0217			0.0059

Birth Cohort (By first year of cohort)								Part-Time Category Threshold					
1910	1920	1930	1940	1950	1960	1970	1980	1	2	3	4	5	6
						0.0733	0.0868	-2.4075	-0.7868	0.1149	0.8994	2.0455	2.8533
						0.1251	**0.2103**	6.9442	8.3977	9.2188	9.9253	11.0076	11.8380
						0.1015	**0.0998**	3.3391	4.7739	5.5599	6.1951	7.1821	7.9709
						0.0790	0.0008	1.3609	2.8023	3.5648	4.1723	5.1009	5.8709
						0.0511	-0.0525	0.5391	1.9714	2.7183	3.3173	4.2137	4.9739
					0.0830	**0.1774**		-0.0347	1.3818	2.1155	2.7071	3.5807	4.3315
					0.0485	**0.1007**		-0.6438	0.7468	1.4668	2.0518	2.9053	3.6484
					0.0235	0.0288		-1.1540	0.1996	0.9064	1.4876	2.3230	3.0567
					0.0011	-0.0457		-1.6117	-0.3149	0.3780	0.9548	1.7756	2.4999
					-0.0140	**-0.1052**		-1.3146	-0.0775	0.6013	1.1714	1.9766	2.6896
					-0.0195	**-0.1520**		-1.9634	-0.7712	-0.1029	0.4629	1.2617	1.9703
					-0.0264	**-0.1837**		-2.4860	-1.3253	-0.6695	-0.1063	0.6910	1.3980
					-0.0397	**-0.2094**		-2.7955	-1.6581	-1.0117	-0.4506	0.3490	1.0554
					-0.0610	**-0.2363**		-2.9615	-1.8408	-1.2018	-0.6414	0.1661	0.8698
					-0.0844	**-0.2631**		-3.0129	-1.9058	-1.2723	-0.7115	0.1063	0.8059
				0.1953	**0.1909**			-2.5243	-1.4269	-0.7963	-0.2343	0.5946	1.2897
				0.1747	**0.1344**			-2.5771	-1.4946	-0.8640	-0.3013	0.5357	1.2236
				0.1434	0.0623			-2.6000	-1.5308	-0.9020	-0.3377	0.5048	1.1884
				0.1021	-0.0092			-2.6351	-1.5724	-0.9438	-0.3791	0.4668	1.1495
				0.0603	-0.0818			-2.6911	-1.6324	-1.0038	-0.4402	0.4093	1.0939
				0.0265	**-0.1268**			-2.6106	-1.5559	-0.9290	-0.3653	0.4880	1.1735
				0.0066	**-0.1434**			-2.5695	-1.5123	-0.8860	-0.3234	0.5343	1.2216
				0.0047	**-0.1268**			-2.4779	-1.4163	-0.7893	-0.2288	0.6335	1.3202
				0.0154	**-0.0969**			-2.2928	-1.2303	-0.6024	-0.0414	0.8230	1.5084
				0.0209	-0.0703			-2.1261	-1.0639	-0.4366	0.1268	0.9942	1.6774
			0.1044	**0.1757**				-1.7014	-0.6408	-0.0115	0.5528	1.4212	2.1045
			0.1148	**0.1684**				-1.6505	-0.5884	0.0410	0.6063	1.4756	2.1621
			0.1219	**0.1479**				-1.7607	-0.6975	-0.0671	0.4982	1.3692	2.0599
			0.1261	**0.1167**				-1.9574	-0.8936	-0.2620	0.3016	1.1756	1.8692
			0.1219	0.0858				-2.1403	-1.0746	-0.4389	0.1220	0.9956	1.6892
			0.1327	0.0833				-2.3162	-1.2452	-0.6067	-0.0475	0.8259	1.5180
			0.1417	0.0953				-2.4732	-1.4038	-0.7635	-0.2066	0.6668	1.3533
			0.1472	0.1157				-2.6105	-1.5470	-0.9046	-0.3484	0.5241	1.2046
			0.1397	**0.1195**				-2.6494	-1.5944	-0.9541	-0.3979	0.4732	1.1487
			0.1348	**0.1223**				-2.6370	-1.5937	-0.9573	-0.4017	0.4689	1.1413
		0.0424	**0.1706**					-2.5592	-1.5303	-0.8998	-0.3450	0.5270	1.1972
		0.0429	**0.1400**					-2.7903	-1.7735	-1.1445	-0.5890	0.2843	0.9538
		0.0425	0.1198					-3.1021	-2.0964	-1.4718	-0.9157	-0.0381	0.6307
		0.0265	0.0819					-3.5594	-2.5609	-1.9349	-1.3786	-0.4969	0.1714
		0.0199	0.0601					-3.9760	-2.9850	-2.3559	-1.7989	-0.9096	-0.2379
		0.0162	0.0595					-4.2079	-3.2226	-2.5858	-2.0296	-1.1366	-0.4625
		0.0219	0.0809					-4.2198	-3.2450	-2.6058	-2.0469	-1.1497	-0.4712
		0.0323	0.1098					-3.6472	-2.6821	-2.0392	-1.4760	-0.5748	0.1097

Continued

Table 8.

Continued

Age Group	Age Coefficient	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School	Number of Children Under Age 6	Trend
			Never Married	Married	High School Graduate	Some College	College Graduate			
59	-0.0065	**-0.6694**	**-0.1354**	**-0.4400**	0.0460	-0.0341	-0.0672			0.0038
60	0.0038	**-0.6948**	**-0.1619**	**-0.4396**	0.0494	-0.0430	**-0.1112**			0.0026
61	c	**-0.7109**	**-0.1405**	**-0.4284**	0.0359	-0.0634	**-0.1612**			**0.0109**
62	c	**-0.7283**	**-0.1199**	**-0.4047**	0.0216	**-0.0861**	**-0.2084**			**0.0117**
63	c	**-0.7659**	-0.0993	**-0.3783**	0.0057	**-0.1105**	**-0.2511**			**0.0120**
64	c	**-0.7894**	-0.0794	**-0.3423**	-0.0142	**-0.1381**	**-0.2817**			**0.0118**
65	c	**-0.8012**	-0.0403	**-0.3075**	-0.0447	**-0.1664**	**-0.3036**			**0.0127**
66	c	**-0.8057**	-0.0368	**-0.2865**	-0.0477	**-0.1695**	**-0.3069**			**0.0124**
67	**-0.0528**	**-0.7214**	-0.0277	**-0.3022**	-0.0422	**-0.1577**	**-0.3078**			**0.0261**
68	**-0.0540**	**-0.6695**	-0.0192	**-0.2972**	-0.0319	**-0.1463**	**-0.3214**			**0.0259**
69	**-0.0507**	**-0.6249**	0.0113	**-0.2962**	-0.0056	**-0.1232**	**-0.3551**			**0.0236**
70	**-0.0189**	**-0.5518**	**0.2503**	**-0.2442**	0.0802	-0.0903	**-0.5588**			**0.0107**

Source: Congressional Budget Office.

Note: Coefficient values shown in bold indicate statistical significance at the 5 percent level. Statistical significance of the threshold values is not evaluated.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

c. Terms do not appear for ages 61 to 66 in order to isolate the effects of eligibility for Social Security retirement benefits at those ages.

Birth Cohort (By first year of cohort)								Part-Time Category Threshold					
1910	1920	1930	1940	1950	1960	1970	1980	1	2	3	4	5	6
		0.0438	**0.1417**					-2.9858	-2.0279	-1.3835	-0.8133	0.0974	0.7909
		0.0478	**0.1586**					-2.4056	-1.4527	-0.8079	-0.2263	0.6926	1.3892
	-0.0752	-0.0909						-2.6435	-1.6963	-1.0540	-0.4563	0.4743	1.1792
	-0.0681	-0.0990						-2.6594	-1.7089	-1.0644	-0.4530	0.4894	1.2000
	-0.0443	-0.0853						-2.6782	-1.7181	-1.0687	-0.4447	0.5088	1.2247
	-0.0127	-0.0486						-2.6756	-1.7055	-1.0539	-0.4190	0.5417	1.2573
	0.0118	-0.0258						-2.6639	-1.6796	-1.0242	-0.3843	0.5867	1.3077
	0.0417	0.0153						-2.6384	-1.6348	-0.9756	-0.3344	0.6510	1.3695
	-0.0942	**-0.2569**						-5.9847	-4.9667	-4.3039	-3.6621	-2.6565	-1.9375
	-0.0843	**-0.2389**						-6.0189	-4.9915	-4.3302	-3.6908	-2.6650	-1.9495
	-0.0615	-0.1863						-5.7705	-4.7409	-4.0766	-3.4408	-2.3971	-1.6764
0.0050	0.0208							-3.4857	-2.4792	-1.8018	-1.1945	-0.1504	0.5504

Table 9.

Unemployment Logit Coefficients for Men

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School
			Never Married	Married	High School Graduate	Some College	College Graduate	
16	-1.4723	0.2059	-0.2823	-0.6714				-0.1495
17	-2.8300	0.1662	-0.1822	-0.3126				-0.3999
18	-0.6538	0.1703	-0.3078	-0.4811				-0.5716
19	0.1193	0.1450	-0.2809	-0.5196				-0.6690
20	0.2073	0.1079	-0.2595	-0.5224				-0.7037
21	0.3048	0.0508	-0.2712	-0.5208				-0.7044
22	0.4828	-0.0030	-0.2734	-0.5144				-0.7114
23	0.6468	-0.0582	-0.2801	-0.5111				-0.7293
24	0.7149	-0.0970	-0.2860	-0.5092				-0.7169
25	0.3155	-0.0902	-0.1228	-0.4497	-0.3922	-0.8568	-1.0768	
26	0.4611	-0.0464	-0.1249	-0.4554	-0.3668	-0.7749	-1.0977	
27	0.4589	-0.0025	-0.1269	-0.4691	-0.3497	-0.7214	-1.1179	
28	0.3503	0.0346	-0.1254	-0.4804	-0.3411	-0.6875	-1.1379	
29	0.2827	0.0659	-0.1221	-0.4863	-0.3394	-0.6690	-1.1549	
30	0.2184	0.0387	-0.1101	-0.4920	-0.3454	-0.6617	-1.1675	
31	-0.1625	-0.0049	-0.0949	-0.4838	-0.3578	-0.6715	-1.1806	
32	-0.1565	-0.0423	-0.0758	-0.4646	-0.3707	-0.6772	-1.1929	
33	-0.1385	-0.0842	-0.0606	-0.4501	-0.3774	-0.6781	-1.1928	
34	-0.1493	-0.1389	-0.0575	-0.4482	-0.3821	-0.6754	-1.1864	
35	-0.1060	-0.1269	-0.0664	-0.4494	-0.3837	-0.6674	-1.1747	
36	-0.1288	-0.1178	-0.0790	-0.4551	-0.3826	-0.6518	-1.1630	
37	-0.1725	-0.1011	-0.0971	-0.4701	-0.3783	-0.6394	-1.1433	
38	-0.1600	-0.0509	-0.1095	-0.4803	-0.3766	-0.6349	-1.1368	
39	-0.1176	-0.0051	-0.1027	-0.4783	-0.3762	-0.6295	-1.1331	
40	-0.0028	-0.0155	-0.0932	-0.4719	-0.3850	-0.6260	-1.1308	
41	-0.4650	0.0047	-0.0764	-0.4670	-0.4002	-0.6218	-1.1260	
42	-0.2695	-0.0025	-0.0674	-0.4617	-0.4183	-0.6147	-1.1277	
43	-0.1543	-0.0515	-0.0710	-0.4644	-0.4366	-0.6029	-1.1243	
44	-0.1421	-0.1076	-0.0773	-0.4710	-0.4564	-0.5926	-1.1198	
45	-0.3264	-0.1096	-0.0783	-0.4772	-0.4689	-0.5853	-1.1181	
46	-0.5133	-0.1540	-0.0860	-0.4829	-0.4764	-0.5810	-1.1090	
47	-0.6942	-0.1658	-0.0801	-0.4810	-0.4803	-0.5812	-1.0944	
48	-0.7313	-0.1501	-0.0630	-0.4652	-0.4747	-0.5771	-1.0710	
49	-0.6572	-0.1293	-0.0643	-0.4489	-0.4645	-0.5773	-1.0503	
50	-0.4452	-0.1447	-0.0716	-0.4394	-0.4465	-0.5739	-1.0203	
51	-0.6351	-0.1368	-0.0742	-0.4307	-0.4311	-0.5652	-1.0003	
52	-0.4326	-0.1697	-0.0858	-0.4319	-0.4173	-0.5603	-0.9932	
53	-0.3253	-0.1773	-0.0885	-0.4397	-0.4193	-0.5626	-0.9987	
54	-0.2734	-0.1569	-0.0870	-0.4515	-0.4273	-0.5607	-1.0047	
55	-0.4332	-0.1069	-0.0928	-0.4633	-0.4436	-0.5581	-1.0251	
56	-0.7843	-0.0642	-0.1065	-0.4748	-0.4568	-0.5633	-1.0482	
57	-1.1473	0.0179	-0.1061	-0.4704	-0.4715	-0.5612	-1.0584	
58	-1.1373	0.0686	-0.1184	-0.4668	-0.4748	-0.5544	-1.0575	

Unemployment Rate	FTE Earnings	Full Time	Trend	Birth Cohort (By first year of cohort)							
				1910	1920	1930	1940	1950	1960	1970	1980
0.0430	0.0009	**1.3588**	-0.0145							-0.1120	-0.1746
0.0699	0.0008	**0.8002**	-0.0068							**-0.1322**	**-0.4354**
0.0733	0.0000	**0.4611**	**-0.0103**							-0.0210	**-0.2732**
0.0811	**-0.0013**	**0.2930**	**-0.0153**							**0.0647**	**-0.1317**
0.0871	**-0.0028**	**0.1523**	**-0.0177**							**0.0751**	**-0.0763**
0.0833	**-0.0041**	**0.0511**	**-0.0278**						**0.0827**	**0.2153**	
0.0882	**-0.0057**	**-0.0701**	**-0.0246**						**0.0371**	**0.1177**	
0.0948	**-0.0078**	**-0.2037**	**-0.0201**						-0.0100	-0.0044	
0.1000	**-0.0100**	**-0.3288**	**-0.0165**						**-0.0430**	**-0.1139**	
0.1082	**-0.0075**	**-0.4849**	**-0.0178**						**-0.0615**	**-0.1584**	
0.1128	**-0.0089**	**-0.5928**	**-0.0164**						**-0.0591**	**-0.1884**	
0.1223	**-0.0101**	**-0.6787**	**-0.0166**						-0.0320	**-0.1604**	
0.1339	**-0.0109**	**-0.7447**	**-0.0170**						-0.0024	**-0.1099**	
0.1437	**-0.0113**	**-0.8005**	**-0.0149**						-0.0099	**-0.1049**	
0.1507	**-0.0113**	**-0.8423**	**-0.0107**						**-0.0533**	**-0.1461**	
0.1447	**-0.0112**	**-0.8788**	**-0.0177**					**0.1674**	**0.1310**		
0.1465	**-0.0109**	**-0.9117**	**-0.0119**					**0.1514**	0.0367		
0.1506	**-0.0108**	**-0.9397**	**-0.0061**					**0.1352**	-0.0553		
0.1523	**-0.0109**	**-0.9565**	-0.0021					**0.1181**	**-0.1275**		
0.1513	**-0.0109**	**-0.9750**	-0.0001					**0.1059**	**-0.1732**		
0.1504	**-0.0109**	**-0.9847**	0.0004					**0.0927**	**-0.1995**		
0.1497	**-0.0108**	**-0.9929**	-0.0004					**0.0857**	**-0.2046**		
0.1489	**-0.0104**	**-0.9953**	-0.0010					**0.0685**	**-0.2085**		
0.1483	**-0.0098**	**-0.9950**	-0.0003					**0.0364**	**-0.2265**		
0.1470	**-0.0093**	**-0.9832**	0.0019					-0.0171	**-0.2666**		
0.1310	**-0.0089**	**-0.9657**	**-0.0165**				**0.2294**	**0.2927**			
0.1238	**-0.0085**	**-0.9459**	**-0.0138**				**0.2363**	**0.2323**			
0.1211	**-0.0081**	**-0.9256**	**-0.0109**				**0.2329**	**0.1728**			
0.1218	**-0.0078**	**-0.8990**	**-0.0085**				**0.2297**	**0.1266**			
0.1258	**-0.0074**	**-0.8781**	**-0.0064**				**0.2179**	0.0975			
0.1281	**-0.0071**	**-0.8563**	-0.0037				**0.1945**	0.0578			
0.1303	**-0.0070**	**-0.8388**	-0.0007				**0.1571**	0.0125			
0.1319	**-0.0069**	**-0.8180**	0.0018				**0.1218**	-0.0239			
0.1331	**-0.0068**	**-0.8160**	0.0047				0.0718	-0.0718			
0.1346	**-0.0069**	**-0.8063**	**0.0068**				0.0274	-0.1161			
0.1278	**-0.0066**	**-0.8010**	-0.0040			**0.1428**	**0.2043**				
0.1281	**-0.0063**	**-0.7820**	-0.0019			**0.1474**	**0.1480**				
0.1307	**-0.0059**	**-0.7583**	0.0025			**0.1410**	0.0597				
0.1349	**-0.0056**	**-0.7085**	0.0071			**0.1216**	-0.0312				
0.1391	**-0.0050**	**-0.6566**	**0.0110**			**0.1056**	-0.1006				
0.1449	**-0.0047**	**-0.5972**	**0.0129**			**0.1030**	-0.1262				
0.1518	**-0.0042**	**-0.5268**	**0.0122**			**0.1138**	-0.0965				
0.1559	**-0.0038**	**-0.4412**	**0.0104**			**0.1230**	-0.0663				

Continued

Table 9.

Continued

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School
			Never Married	Married	High School Graduate	Some College	College Graduate	
59	**-0.5469**	0.0734	-0.1162	**-0.4554**	**-0.4678**	**-0.5456**	**-1.0474**	
60	**0.3616**	**0.1509**	-0.0966	**-0.4391**	**-0.4595**	**-0.5444**	**-1.0173**	
61	**-2.6413**	**0.1448**	-0.0560	**-0.4139**	**-0.4468**	**-0.5238**	**-0.9555**	
62	**-2.6971**	**0.2558**	-0.0440	**-0.4085**	**-0.4355**	**-0.5099**	**-0.8999**	
63	**-2.8013**	**0.3686**	-0.0349	**-0.4092**	**-0.4285**	**-0.4998**	**-0.8483**	
64	**-2.9840**	**0.4893**	-0.0391	**-0.4136**	**-0.4188**	**-0.4872**	**-0.7935**	
65	**-3.1829**	**0.6020**	-0.0335	**-0.4067**	**-0.4198**	**-0.4624**	**-0.7408**	
66	**-3.2884**	**0.6913**	-0.0618	**-0.4270**	**-0.4251**	**-0.4622**	**-0.7213**	
67	**4.8393**	**0.8759**	-0.0930	**-0.4613**	**-0.4020**	**-0.4380**	**-0.6381**	
68	**3.1791**	**0.8280**	-0.1445	**-0.4718**	**-0.3659**	**-0.4073**	**-0.5824**	
69	0.7337	**0.7661**	-0.2214	**-0.4982**	**-0.3459**	**-0.3752**	**-0.5366**	
70	-1.8989	-0.1713	-0.2507	**-0.4850**	-0.1310	**-0.0548**	**-0.4556**	

Source: Congressional Budget Office.

Notes: Coefficient values shown in bold indicate statistical significance at the 5 percent level.

FTE = full-time equivalent.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

Unemployment Rate	FTE Earnings	Full Time	Trend	Birth Cohort (By first year of cohort)							
				1910	1920	1930	1940	1950	1960	1970	1980
0.1567	**-0.0033**	**-0.3488**	**0.0084**			**0.1254**	-0.0575				
0.1546	**-0.0029**	**-0.2328**	0.0055			**0.1323**	-0.0328				
0.1386	**-0.0024**	**-0.0715**	**-0.0176**		**0.2179**	**0.5362**					
0.1196	**-0.0020**	**0.1146**	**-0.0256**		**0.2615**	**0.6178**					
0.1060	**-0.0017**	**0.3035**	**-0.0329**		**0.3015**	**0.6889**					
0.1010	-0.0013	**0.4782**	**-0.0368**		**0.3127**	**0.7054**					
0.0961	-0.0013	**0.6202**	**-0.0390**		**0.3271**	**0.6879**					
0.0888	-0.0013	**0.6866**	**-0.0417**		**0.3701**	**0.6926**					
0.0697	-0.0015	**0.6742**	**-0.0189**		0.1239	0.1297					
0.0686	**-0.0020**	**0.6247**	**-0.0241**		**0.2284**	0.2896					
0.0633	**-0.0027**	**0.5787**	**-0.0295**		**0.3573**	**0.4602**					
0.1266	**-0.0050**	**0.4860**	0.0054	**-0.3046**	-0.1741						

Table 10.

Unemployment Logit Coefficients for Women

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School	Number of Children Under Age 6	Unemployment Rate
			Never Married	Married	High School Graduate	Some College	College Graduate			
16	-1.8968	0.0601	0.6272	0.6060				-0.4712	0.1949	0.0384
17	-2.0872	0.0989	-0.3728	-0.2313				-0.3647	0.1088	0.0432
18	0.0807	0.1129	-0.4406	-0.3526				-0.5211	0.0678	0.0511
19	0.7332	0.1194	-0.4104	-0.4019				-0.5894	0.0766	0.0484
20	0.6486	0.1151	-0.3625	-0.4176				-0.5896	0.0958	0.0489
21	0.6985	0.1182	-0.3406	-0.4289				-0.5788	0.1053	0.0485
22	0.7408	0.1366	-0.3125	-0.4385				-0.5703	0.1039	0.0532
23	0.7930	0.1468	-0.2966	-0.4543				-0.5760	0.0933	0.0584
24	0.7976	0.1661	-0.2854	-0.4677				-0.5341	0.0752	0.0610
25	0.7594	0.1751	-0.2122	-0.4224	-0.4163	-0.6730	-0.5839		0.0141	0.0646
26	0.8040	0.1487	-0.2017	-0.4338	-0.4288	-0.6366	-0.6326		-0.0160	0.0638
27	0.6827	0.1046	-0.1921	-0.4390	-0.4296	-0.6087	-0.6717		-0.0416	0.0638
28	0.4462	0.0604	-0.1870	-0.4455	-0.4219	-0.5895	-0.6992		-0.0644	0.0674
29	0.2339	0.0309	-0.1842	-0.4544	-0.4188	-0.5754	-0.7193		-0.0836	0.0725
30	0.0801	0.0154	-0.1794	-0.4585	-0.4131	-0.5654	-0.7326		-0.0948	0.0788
31	-0.2524	0.0139	-0.1690	-0.4591	-0.4070	-0.5531	-0.7378		-0.1002	0.0755
32	-0.2340	0.0078	-0.1594	-0.4633	-0.4061	-0.5438	-0.7408		-0.1049	0.0807
33	-0.1811	0.0412	-0.1454	-0.4634	-0.4100	-0.5398	-0.7481		-0.1017	0.0851
34	-0.1245	0.0814	-0.1344	-0.4660	-0.4133	-0.5452	-0.7635		-0.0883	0.0899
35	-0.0793	0.1115	-0.1245	-0.4724	-0.4229	-0.5550	-0.7913		-0.0778	0.0894
36	-0.0060	0.1481	-0.1215	-0.4835	-0.4314	-0.5657	-0.8149		-0.0694	0.0845
37	0.0048	0.1932	-0.1230	-0.4915	-0.4374	-0.5796	-0.8376		-0.0558	0.0792
38	0.0475	0.2167	-0.1233	-0.4965	-0.4423	-0.5916	-0.8523		-0.0473	0.0766
39	0.0166	0.2252	-0.1266	-0.4916	-0.4514	-0.6032	-0.8678		-0.0443	0.0748
40	-0.0483	0.2323	-0.1305	-0.4821	-0.4561	-0.6053	-0.8607		-0.0325	0.0766
41	-0.6225	0.2211	-0.1298	-0.4653	-0.4643	-0.6109	-0.8538		-0.0166	0.0706
42	-0.7140	0.1945	-0.1297	-0.4513	-0.4733	-0.6137	-0.8445		-0.0102	0.0729
43	-0.7485	0.1721	-0.1350	-0.4393	-0.4823	-0.6196	-0.8449		0.0012	0.0802
44	-0.7778	0.1597	-0.1304	-0.4348	-0.4799	-0.6119	-0.8199		0.0031	0.0898
45	-0.6724	0.1556	-0.1282	-0.4351	-0.4819	-0.6131	-0.8184		-0.0021	0.0931
46	-0.5732	0.1595	-0.1280	-0.4350	-0.4800	-0.6017	-0.8187		-0.0010	0.0932
47	-0.4378	0.1751	-0.1322	-0.4343	-0.4794	-0.5926	-0.8229		0.0319	0.0921
48	-0.5390	0.1700	-0.1360	-0.4342	-0.4811	-0.5806	-0.8157		0.0711	0.0912
49	-0.4375	0.1458	-0.1460	-0.4340	-0.4931	-0.5781	-0.8269		0.1264	0.0851
50	-0.3641	0.1021	-0.1494	-0.4276	-0.5091	-0.5817	-0.8293		0.1797	0.0820
51	-0.1839	0.0711	-0.1500	-0.4215	-0.5322	-0.6009	-0.8380		0.2407	0.0791
52	-0.1264	0.0386	-0.1430	-0.4113	-0.5488	-0.6159	-0.8429		0.2573	0.0768
53	-0.1292	0.0429	-0.1435	-0.4050	-0.5641	-0.6275	-0.8515		0.2591	0.0730
54	-0.2975	0.0871	-0.1448	-0.3839	-0.5789	-0.6402	-0.8612		0.2375	0.0757
55	-0.4488	0.1438	-0.1532	-0.3703	-0.5799	-0.6371	-0.8631		0.2177	0.0754
56	-0.3347	0.1715	-0.1724	-0.3638	-0.5712	-0.6203	-0.8600			0.0745
57	-0.1256	0.1858	-0.1972	-0.3548	-0.5678	-0.6148	-0.8582			0.0751
58	0.3124	0.1777	-0.2182	-0.3389	-0.5595	-0.6143	-0.8607			0.0812

FTE Earnings	Full Time	Trend	Birth Cohort (By first year of cohort) 1910	1920	1930	1940	1950	1960	1970	1980
-0.0028	**1.1932**	-0.0147							-0.0946	-0.2713
0.0014	**0.6268**	**-0.0275**							-0.0014	-0.0150
0.0004	**0.1551**	**-0.0255**							0.0328	0.0187
-0.0014	-0.0346	**-0.0230**							0.0372	0.0029
-0.0031	**-0.1576**	**-0.0226**							0.0352	0.0111
-0.0045	**-0.2330**	**-0.0240**						0.0154	0.0671	
-0.0060	**-0.3144**	**-0.0216**						-0.0136	0.0152	
-0.0079	**-0.3937**	**-0.0191**						-0.0407	-0.0367	
-0.0097	**-0.4579**	**-0.0173**						**-0.0627**	-0.0878	
-0.0088	**-0.4783**	**-0.0173**						**-0.0683**	**-0.1089**	
-0.0097	**-0.5224**	**-0.0155**						**-0.0733**	**-0.1420**	
-0.0105	**-0.5411**	**-0.0141**						**-0.0775**	**-0.1613**	
-0.0106	**-0.5496**	**-0.0133**						**-0.0662**	**-0.1529**	
-0.0104	**-0.5483**	**-0.0133**						-0.0505	**-0.1339**	
-0.0099	**-0.5390**	**-0.0126**						-0.0421	**-0.1292**	
-0.0095	**-0.5316**	**-0.0220**					**0.1388**	**0.1609**		
-0.0091	**-0.5245**	**-0.0199**					**0.1065**	**0.1138**		
-0.0088	**-0.5119**	**-0.0165**					**0.0680**	0.0376		
-0.0086	**-0.5066**	**-0.0127**					0.0314	-0.0352		
-0.0081	**-0.5032**	**-0.0091**					-0.0018	**-0.1072**		
-0.0075	**-0.5064**	**-0.0063**					-0.0334	**-0.1737**		
-0.0069	**-0.5155**	-0.0050					-0.0458	**-0.2107**		
-0.0065	**-0.5219**	-0.0048					-0.0427	**-0.2147**		
-0.0060	**-0.5176**	-0.0054					-0.0311	**-0.2028**		
-0.0063	**-0.5114**	**-0.0072**					-0.0084	**-0.1721**		
-0.0065	**-0.4954**	**-0.0223**				**0.1556**	**0.2565**			
-0.0068	**-0.4775**	**-0.0207**				**0.1310**	**0.2176**			
-0.0068	**-0.4611**	**-0.0175**				**0.0906**	0.1517			
-0.0070	**-0.4561**	**-0.0137**				0.0543	0.0876			
-0.0064	**-0.4585**	**-0.0106**				0.0261	0.0428			
-0.0061	**-0.4635**	**-0.0089**				0.0109	0.0208			
-0.0057	**-0.4630**	**-0.0094**				0.0177	0.0390			
-0.0056	**-0.4678**	**-0.0114**				0.0444	0.0930			
-0.0056	**-0.4616**	**-0.0137**				0.0699	0.1385			
-0.0060	**-0.4437**	**-0.0153**				**0.0916**	**0.1699**			
-0.0060	**-0.4317**	**-0.0116**			-0.0264	0.0522				
-0.0062	**-0.4197**	**-0.0129**			-0.0043	0.0931				
-0.0062	**-0.4010**	**-0.0141**			0.0191	0.1292				
-0.0061	**-0.3798**	**-0.0122**			0.0056	0.1051				
-0.0057	**-0.3609**	**-0.0098**			-0.0163	0.0630				
-0.0058	**-0.3280**	-0.0064			-0.0530	-0.0127				
-0.0059	**-0.2947**	-0.0034			-0.0881	-0.0911				
-0.0058	**-0.2486**	-0.0009			**-0.1171**	-0.1496				

Continued

Table 10.

Continued

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School	Number of Children Under Age 6	Unemployment Rate
			Never Married	Married	High School Graduate	Some College	College Graduate			
59	**0.9654**	**0.1609**	**-0.2301**	**-0.3412**	**-0.5429**	**-0.6038**	**-0.8592**			**0.0862**
60	**1.9182**	**0.2040**	**-0.2224**	**-0.3359**	**-0.5363**	**-0.6111**	**-0.8744**			**0.0946**
61	**-2.5056**	**0.1093**	**-0.2139**	**-0.3178**	**-0.5264**	**-0.6285**	**-0.8678**			**0.0894**
62	**-2.5841**	**0.1821**	**-0.1852**	**-0.2988**	**-0.5134**	**-0.6372**	**-0.8617**			**0.0771**
63	**-2.6696**	**0.2784**	-0.1174	**-0.2706**	**-0.4945**	**-0.6530**	**-0.8449**			**0.0610**
64	**-2.8709**	**0.3995**	-0.0616	**-0.2382**	**-0.4695**	**-0.6778**	**-0.8225**			**0.0541**
65	**-3.0383**	**0.5170**	-0.0167	**-0.2108**	**-0.4296**	**-0.6599**	**-0.7657**			0.0403
66	**-3.1754**	**0.6130**	0.0215	**-0.2027**	**-0.3876**	**-0.6251**	**-0.7279**			0.0258
67	**0.7527**	**0.7142**	0.0523	**-0.2253**	**-0.3370**	**-0.5993**	**-0.6889**			0.0109
68	**0.3844**	**0.6797**	-0.0018	**-0.2769**	**-0.3001**	**-0.5276**	**-0.6703**			0.0109
69	**0.5671**	**0.6330**	-0.0252	**-0.3231**	**-0.2788**	**-0.4532**	**-0.6672**			0.0114
70	-3.6074	0.0035	-0.1546	**-0.4972**	**-0.2494**	**-0.5345**	**-0.4797**			0.0528

Source: Congressional Budget Office.

Note: Coefficient values shown in bold indicate statistical significance at the 5 percent level.

FTE = full-time equivalent.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

FTE Earnings	Full Time	Trend	Birth Cohort (By first year of cohort)							
			1910	1920	1930	1940	1950	1960	1970	1980
-0.0053	**-0.1987**	-0.0015			-0.1095	-0.1526				
-0.0049	**-0.1350**	-0.0021			-0.0949	-0.1482				
-0.0041	-0.0556	**-0.0218**		**0.2017**	**0.3350**					
-0.0028	0.0617	**-0.0257**		**0.2190**	**0.3798**					
-0.0017	**0.2029**	**-0.0301**		**0.2405**	**0.4252**					
-0.0008	**0.3589**	**-0.0302**		**0.2455**	**0.4120**					
0.0000	**0.5133**	**-0.0288**		**0.2286**	**0.3455**					
0.0007	**0.6380**	**-0.0271**		**0.2202**	0.2605					
0.0008	**0.6884**	-0.0093		0.0349	-0.1848					
0.0006	**0.6837**	-0.0110		0.0963	-0.1507					
0.0004	**0.6897**	-0.0129		0.1719	-0.1204					
-0.0003	**0.5265**	-0.0119	0.0133	0.2696						

Table 11.

Earnings Coefficients for Men

Age	Age Coefficient	Education Level[a]: Less Than High School, Interacted with Age	Education Level[a]: Some College, Interacted with Age	Education Level[a]: College Graduate, Interacted with Age
16	-0.3538	0.2820		
17	-0.3640	0.2989		
18	-0.3037	0.2473		
19	-0.2880	0.2484	-0.2196	
20	-0.2394	0.2352	-0.2290	
21	-0.1717	0.2071	-0.2632	
22	-0.1245	0.1992	-0.2663	-0.8048
23	-0.0694	0.1836	-0.2515	-0.8113
24	-0.0318	0.1594	-0.2325	-0.7516
25	0.0490	0.1405	-0.2036	-0.7174
26	0.0708	0.1460	-0.1744	-0.6677
27	0.1050	0.1150	-0.1670	-0.6470
28	0.1215	0.0937	-0.1585	-0.6028
29	0.1415	0.1075	-0.1355	-0.5519
30	0.1495	0.0973	-0.1197	-0.5342
31	0.1583	0.0839	-0.1091	-0.5018
32	0.1604	0.0905	-0.0923	-0.4526
33	0.1698	0.0902	-0.1001	-0.4419
34	0.1784	0.0839	-0.0826	-0.4144
35	0.1900	0.0823	-0.0802	-0.3622
36	0.2061	0.0624	-0.0830	-0.3595
37	0.2025	0.0348	-0.0683	-0.3413
38	0.2035	0.0690	-0.0629	-0.3195
39	0.2068	0.0573	-0.0668	-0.3044
40	0.2024	0.0448	-0.0563	-0.2888
41	0.1874	0.0395	-0.0508	-0.2556
42	0.1778	0.0719	-0.0398	-0.2528
43	0.1882	0.0195	-0.0741	-0.2521
44	0.1918	0.0111	-0.0546	-0.2538
45	0.1620	0.0435	-0.0386	-0.2187
46	0.1676	0.0444	-0.0545	-0.1985
47	0.1792	0.0199	-0.0556	-0.2318
48	0.1772	0.0228	-0.0448	-0.2141
49	0.1625	0.0198	-0.0236	-0.2045
50	0.1348	0.0398	-0.0111	-0.1858
51	0.1333	0.0468	-0.0221	-0.1611
52	0.1367	0.0383	-0.0267	-0.1903
53	0.1366	0.0306	-0.0278	-0.1796
54	0.1156	0.0482	-0.0314	-0.1597
55	0.0998	0.0558	-0.0368	-0.1538
56	0.1028	0.0590	-0.0493	-0.1624
57	0.0824	0.0722	-0.0215	-0.1354
58	0.0560	0.0961	-0.0149	-0.1268

Coefficients on Additional Control Variables	
Pre-1940s Cohort	10.2672
1940s Cohort	10.1515
1950s Cohort	10.0114
1960s Cohort	9.8756
1970s Cohort	9.7764
Pre-1940s×College Graduate	0.6328
1940s×College Graduate	0.7156
1950s×College Graduate	0.8312
1960s×College Graduate	0.9744
1970s×College Graduate	1.0479
Pre-1940s×Some College	0.1605
1940s×Some College	0.1878
1950s×Some College	0.2254
1960s×Some College	0.2650
1970s×Some College	0.2868
Pre-1940s×LSHS	-0.3063
1940s×LSHS	-0.3596
1950s×LSHS	-0.3778
1960s×LSHS	-0.3805
1970s×LSHS	-0.3629
OASDI Status	-0.2294
OASDI×College Graduate	-0.1060
OASDI×Some College	0.0123
OASDI×LSHS	0.0713

Continued

Table 11.

Continued

Age	Age Coefficient	Education Level[a]: Less Than High School, Interacted with Age	Education Level[a]: Some College, Interacted with Age	Education Level[a]: College Graduate, Interacted with Age
59	**0.0732**	**0.0654**	-0.0304	**-0.1448**
60	**0.0622**	**0.0599**	-0.0435	**-0.1390**
61	**0.0315**	**0.0877**	-0.0119	**-0.1413**
62	**0.0615**	**0.0899**	-0.0441	**-0.1413**
63	**0.0806**	**0.0441**	**-0.0950**	**-0.1260**
64	**0.0612**	**0.0726**	**-0.0656**	**-0.1151**
65	**0.0843**	0.0204	**-0.0786**	**-0.1393**
66	0.0456	0.0341	-0.0221	-0.0478
67	-0.0172	**0.0507**	-0.0451	0.0375
68	-0.0186	**0.0675**	-0.0029	0.0112
69	**-0.0472**	**0.0755**	0.0150	-0.0125
70	0.0061	-0.0399	0.0691	-0.0371

Source: Congressional Budget Office.

Notes: Coefficient values shown in bold indicate statistical significance at the 5 percent level.

LSHS = less than high school; OASDI = Old-Age, Survivors, and Disability Insurance.

a. The omitted category includes high school graduates.

Table 12.

Earnings Coefficients for Women

Age	Age Coefficient	Education Level[a]: Less Than High School, Interacted with Age	Education Level[a]: Some College, Interacted with Age	Education Level[a]: College Graduate, Interacted with Age
16	**-0.3573**	**0.3348**		
17	**-0.4022**	**0.3998**		
18	**-0.3495**	**0.3290**		
19	**-0.3615**	**0.3068**	**-0.1278**	
20	**-0.3281**	**0.3057**	**-0.1250**	
21	**-0.2894**	**0.3046**	**-0.1109**	
22	**-0.2434**	**0.2424**	**-0.1376**	**-0.4161**
23	**-0.2181**	**0.2505**	**-0.0979**	**-0.3808**
24	**-0.1840**	**0.2353**	**-0.0820**	**-0.3421**
25	**-0.1394**	**0.1978**	**-0.0567**	**-0.2816**
26	**-0.1162**	**0.1949**	**-0.0462**	**-0.2560**
27	**-0.1076**	**0.1981**	-0.0193	**-0.2012**
28	**-0.0993**	**0.1912**	-0.0209	**-0.1586**
29	**-0.0795**	**0.1577**	-0.0147	**-0.1378**
30	**-0.0752**	**0.1749**	0.0031	**-0.1127**
31	**-0.0894**	**0.1935**	0.0102	**-0.0681**
32	**-0.0818**	**0.1558**	0.0092	**-0.0496**
33	**-0.0848**	**0.1535**	0.0077	-0.0251
34	**-0.0815**	**0.1657**	0.0096	-0.0191
35	**-0.0816**	**0.1706**	0.0294	0.0097
36	**-0.0694**	**0.1534**	0.0137	0.0027
37	**-0.0574**	**0.1489**	0.0165	-0.0010
38	**-0.0615**	**0.1530**	0.0259	0.0027
39	**-0.0649**	**0.1643**	0.0321	0.0079
40	**-0.0637**	**0.1369**	0.0199	0.0058
41	**-0.0575**	**0.1289**	0.0215	0.0172
42	**-0.0585**	**0.1211**	0.0269	0.0218
43	**-0.0588**	**0.1376**	0.0336	0.0211
44	**-0.0668**	**0.1508**	0.0328	0.0387
45	**-0.0468**	**0.1324**	0.0197	0.0370
46	**-0.0588**	**0.1147**	0.0152	**0.0458**
47	**-0.0528**	**0.1205**	0.0136	**0.0473**
48	**-0.0407**	**0.1171**	0.0057	0.0271
49	**-0.0447**	**0.1156**	0.0142	**0.0550**
50	**-0.0446**	**0.1153**	0.0251	**0.0461**
51	**-0.0378**	**0.0922**	0.0328	**0.0487**
52	**-0.0588**	**0.1127**	0.0407	**0.0898**
53	**-0.0547**	**0.1219**	**0.0505**	**0.1036**
54	**-0.0516**	**0.1242**	0.0391	**0.0943**
55	**-0.0738**	**0.1201**	**0.0429**	**0.1098**
56	**-0.0580**	**0.1097**	**0.0471**	**0.0940**
57	**-0.0650**	**0.1246**	0.0356	**0.0988**
58	**-0.0746**	**0.1300**	**0.0502**	**0.1033**

Coefficients on Additional Control Variables

Pre-1940s Cohort	**9.9085**
1940s Cohort	**9.8982**
1950s Cohort	**9.8797**
1960s Cohort	**9.8253**
1970s Cohort	**9.7467**
Pre-1940s×College Graduate	**0.3760**
1940s×College Graduate	**0.4824**
1950s×College Graduate	**0.5520**
1960s×College Graduate	**0.6543**
1970s×College Graduate	**0.7269**
Pre-1940s×Some College	**0.1231**
1940s×Some College	**0.1746**
1950s×Some College	**0.1857**
1960s×Some College	**0.1877**
1970s×Some College	**0.1964**
Pre-1940s×LSHS	**-0.3510**
1940s×LSHS	**-0.3830**
1950s×LSHS	**-0.4246**
1960s×LSHS	**-0.4378**
1970s×LSHS	**-0.4096**
OASDI Status	**-0.1526**
OASDI×College Graduate	0.0135
OASDI×Some College	0.0091
OASDI×LSHS	**0.0808**

Continued

Table 12.

Continued

Age	Age Coefficient	Education Level[a]: Less Than High School, Interacted with Age	Education Level[a]: Some College, Interacted with Age	Education Level[a]: College Graduate, Interacted with Age
59	**-0.0781**	**0.1398**	0.0448	**0.1348**
60	**-0.0459**	**0.0958**	**0.0659**	**0.0687**
61	**-0.0513**	**0.0983**	**0.0560**	**0.1011**
62	-0.0111	**0.0860**	0.0202	0.0466
63	**0.0419**	**0.0524**	-0.0209	0.0073
64	-0.0258	**0.0912**	**0.0736**	**0.1195**
65	0.0241	**0.0593**	0.0027	**0.0576**
66	-0.0148	**0.1087**	**0.0637**	**0.1157**
67	0.0161	**0.0755**	0.0568	**0.1085**
68	0.0118	**0.0664**	-0.0035	0.0503
69	**-0.0722**	**0.0605**	**0.1427**	0.0308
70	-0.0405	**0.0676**	0.0478	-0.0325

Source: Congressional Budget Office.

Notes: Coefficient values shown in bold indicate statistical significance at the 5 percent level.

LSHS = less than high school; OASDI = Old-Age, Survivors, and Disability Insurance.

a. The omitted category includes high school graduates.

Table 13.

Annual Earnings Distribution for 50- to 60-Year-Old Men, by Lifetime Earnings Decile

(Percent)

Annual Earnings Decile	Lifetime Earnings Decile									
	1	2	3	4	5	6	7	8	9	10
					2000					
1	**3.38**	1.84	1.03	0.88	0.51	0.52	0.60	0.53	0.42	0.29
2	3.11	**2.32**	1.49	0.83	0.60	0.49	0.36	0.44	0.23	0.12
3	1.90	2.16	**1.90**	1.32	0.86	0.68	0.48	0.30	0.23	0.16
4	0.81	1.56	2.03	**1.72**	1.49	0.91	0.60	0.45	0.30	0.12
5	0.31	1.01	1.44	1.81	**1.95**	1.50	0.95	0.60	0.27	0.16
6	0.17	0.50	1.10	1.49	1.96	**1.90**	1.44	0.88	0.41	0.15
7	0.19	0.30	0.58	1.01	1.33	1.82	**2.04**	1.60	0.84	0.29
8	0.05	0.14	0.29	0.60	0.93	1.43	1.97	**2.23**	1.85	0.51
9	0.04	0.09	0.15	0.30	0.26	0.65	1.12	2.23	**3.37**	1.79
10	0.03	0.06	0.02	0.04	0.10	0.11	0.42	0.75	2.08	**6.41**
					2010					
1	**2.72**	2.12	1.73	1.17	0.86	0.43	0.42	0.32	0.16	0.05
2	1.97	**1.92**	1.78	1.59	0.99	0.80	0.48	0.27	0.17	0.06
3	1.49	1.40	**1.76**	1.68	1.20	1.03	0.74	0.46	0.19	0.08
4	1.19	1.28	1.35	**1.47**	1.46	1.25	0.97	0.61	0.31	0.08
5	0.87	1.03	1.04	1.26	**1.58**	1.43	1.18	0.99	0.49	0.15
6	0.71	0.75	0.89	1.01	1.33	**1.42**	1.48	1.26	0.90	0.23
7	0.47	0.57	0.65	0.93	1.19	1.40	**1.58**	1.52	1.29	0.43
8	0.32	0.53	0.45	0.53	0.76	1.18	1.50	**1.86**	1.79	1.09
9	0.21	0.33	0.25	0.29	0.47	0.82	1.20	1.86	**2.57**	2.00
10	0.05	0.07	0.12	0.07	0.18	0.25	0.45	0.85	2.14	**5.82**
					2040					
1	**5.41**	1.87	1.07	0.69	0.38	0.24	0.14	0.11	0.04	0.03
2	2.55	**3.05**	1.87	1.18	0.68	0.38	0.19	0.06	0.06	0.01
3	0.87	2.20	**2.20**	1.77	1.25	0.85	0.47	0.27	0.09	0.02
4	0.45	1.34	1.85	**1.76**	1.69	1.27	0.83	0.52	0.24	0.05
5	0.25	0.74	1.32	1.66	**1.70**	1.73	1.23	0.87	0.43	0.07
6	0.22	0.32	0.80	1.27	1.67	**1.70**	1.75	1.32	0.78	0.18
7	0.11	0.21	0.50	0.97	1.32	1.65	**1.88**	1.62	1.35	0.40
8	0.07	0.15	0.26	0.44	0.87	1.35	1.73	**2.14**	2.08	0.92
9	0.07	0.09	0.12	0.21	0.35	0.69	1.37	2.13	**2.74**	2.25
10	0.02	0.04	0.02	0.05	0.09	0.13	0.41	0.98	2.20	**6.09**

Continued

Table 13.

Continued

(Percent)

Annual Earnings Decile	Lifetime Earnings Decile									
	1	2	3	4	5	6	7	8	9	10
					2070					
1	**5.25**	2.14	1.13	0.61	0.31	0.24	0.17	0.05	0.07	0.02
2	2.43	**2.64**	1.98	1.36	0.71	0.38	0.30	0.12	0.06	0.02
3	0.95	2.12	**2.20**	1.89	1.32	0.79	0.39	0.24	0.08	0.01
4	0.49	1.27	1.69	**1.77**	1.73	1.25	1.02	0.55	0.20	0.04
5	0.33	0.82	1.38	1.51	**1.78**	1.44	1.33	0.90	0.39	0.10
6	0.22	0.47	0.78	1.23	1.50	**1.77**	1.74	1.31	0.76	0.25
7	0.19	0.29	0.47	0.77	1.22	1.68	**1.66**	1.78	1.45	0.48
8	0.08	0.14	0.24	0.53	0.85	1.38	1.67	**2.09**	1.98	1.03
9	0.05	0.08	0.10	0.26	0.48	0.83	1.25	1.95	**2.78**	2.23
10	0.00	0.04	0.03	0.06	0.10	0.23	0.49	1.00	2.24	**5.82**

Source: Congressional Budget Office.

Table 14.

Annual Earnings Distribution for 50- to 60-Year-Old Women, by Lifetime Earnings Decile

(Percent)

Annual Earnings Decile	Lifetime Earnings Decile									
	1	2	3	4	5	6	7	8	9	10
					2000					
1	**3.75**	1.77	1.10	0.74	0.65	0.54	0.41	0.34	0.30	0.37
2	2.83	**2.39**	1.63	0.98	0.71	0.58	0.28	0.26	0.17	0.20
3	1.67	2.48	**2.10**	1.45	0.78	0.48	0.48	0.22	0.23	0.11
4	0.89	1.58	1.64	**1.65**	1.44	1.06	0.80	0.47	0.28	0.16
5	0.46	1.01	1.65	1.77	**1.68**	1.34	1.02	0.55	0.31	0.21
6	0.23	0.37	0.97	1.62	1.79	**1.90**	1.61	0.88	0.46	0.16
7	0.11	0.26	0.50	0.98	1.58	1.49	**1.85**	1.85	1.13	0.25
8	0.04	0.09	0.26	0.51	0.84	1.50	1.74	**2.20**	2.13	0.70
9	0.02	0.04	0.11	0.26	0.36	0.81	1.38	2.03	**2.86**	2.13
10	0.00	0.01	0.02	0.04	0.19	0.28	0.44	1.19	2.14	**5.71**
					2010					
1	**2.79**	1.99	1.42	1.21	1.02	0.60	0.41	0.34	0.12	0.07
2	2.01	**1.59**	1.62	1.53	1.17	0.94	0.60	0.32	0.18	0.07
3	1.45	1.40	**1.61**	1.55	1.30	1.04	0.74	0.60	0.22	0.10
4	1.09	1.21	1.35	**1.33**	1.45	1.26	1.11	0.79	0.28	0.10
5	0.91	1.07	1.18	1.46	**1.35**	1.34	1.17	0.80	0.58	0.17
6	0.73	1.02	0.96	0.93	1.14	**1.30**	1.41	1.18	0.99	0.32
7	0.49	0.79	0.79	0.78	1.18	1.29	**1.40**	1.42	1.31	0.56
8	0.33	0.51	0.52	0.71	0.84	1.04	1.46	**1.69**	1.83	1.07
9	0.14	0.34	0.37	0.37	0.41	0.90	1.17	1.82	**2.38**	2.12
10	0.05	0.09	0.15	0.14	0.15	0.29	0.54	1.06	2.11	**5.43**
					2040					
1	**4.87**	2.22	1.14	0.68	0.45	0.31	0.16	0.11	0.03	0.02
2	2.38	**2.52**	1.86	1.23	0.98	0.54	0.27	0.13	0.09	0.01
3	1.15	1.98	**2.07**	1.70	1.36	0.82	0.46	0.32	0.10	0.03
4	0.63	1.19	1.69	**1.76**	1.60	1.48	0.95	0.50	0.17	0.03
5	0.42	0.82	1.25	1.49	**1.68**	1.52	1.27	0.92	0.52	0.09
6	0.20	0.54	0.88	1.21	1.48	**1.74**	1.49	1.27	0.88	0.32
7	0.17	0.39	0.63	1.01	1.01	1.40	**1.82**	1.70	1.37	0.51
8	0.13	0.17	0.31	0.63	0.78	1.23	1.74	**2.06**	1.93	1.04
9	0.02	0.14	0.14	0.22	0.50	0.74	1.33	1.94	**2.60**	2.36
10	0.02	0.04	0.04	0.05	0.13	0.26	0.51	1.05	2.31	**5.58**

Continued

Table 14.

Continued

(Percent)

Annual Earnings Decile	Lifetime Earnings Decile									
	1	2	3	4	5	6	7	8	9	10
					2070					
1	**4.71**	2.16	1.22	0.76	0.52	0.24	0.18	0.11	0.05	0.03
2	2.44	**2.63**	1.77	1.21	0.78	0.64	0.30	0.15	0.05	0.02
3	1.16	1.91	**2.02**	1.78	1.36	0.89	0.48	0.27	0.11	0.02
4	0.61	1.19	1.77	**1.72**	1.55	1.29	1.14	0.54	0.17	0.03
5	0.47	0.86	1.20	1.49	**1.60**	1.51	1.31	0.98	0.49	0.09
6	0.24	0.54	0.86	1.14	1.54	**1.66**	1.55	1.35	0.85	0.26
7	0.18	0.35	0.55	0.97	1.29	1.51	**1.69**	1.75	1.31	0.41
8	0.08	0.21	0.30	0.63	0.69	1.26	1.62	**1.92**	2.17	1.11
9	0.08	0.10	0.27	0.20	0.50	0.72	1.31	1.85	**2.64**	2.33
10	0.02	0.04	0.06	0.08	0.16	0.27	0.43	1.09	2.14	**5.71**

Source: Congressional Budget Office.

Appendix A: March Current Population Survey Data Used in the Analysis

The March Current Population Survey (CPS) collects information on about 60,000 households each year. The data set contains a wide variety of economic and demographic information on the individual, family, and household. The complete data set used to create the inputs and estimate the equations described in the text combines annual March CPS data sets from 1976 to 2004 (or calendar years 1975 to 2003) for people ages 16 to 90 with annual earnings greater than $590 in real (inflation-adjusted) 1993 dollars. This full data set comprises more than 2 million observations for the 29-year period.

Although there are some measurement concerns associated with survey data (non-response rates, multiple job holding reporting, topcoded or imputed earnings) as well as conceptual concerns (respondent's report of overtime work, number of hours worked, or other sources of income), the CPS is widely used in the economic literature and policy spheres and is regarded as one of the more reliable surveys for labor force data. In order to create the demographic, wage, and labor force variables used in the equations and inputs, the data were adjusted or categorized in several ways.

Demographics

The CPS generally collects ultimate educational attainment by number of years in school or degree earned; the specific categories have changed over time. For purposes of the microsimulation model, ultimate educational attainment is grouped into four categories (less than high school, high school graduate, some college, and college graduate), using the more specific CPS definitions. People with missing educational attainment are dropped from the sample.

A respondent is categorized as in school if he or she reports current attendance at high school or college. This variable is available starting in 1986. Prior to 1986, the model assumes the following groups are in school: everyone under age 18; high school graduates 18 and younger; people 20 and younger with some college education; and college graduates 22 and younger.

For the full sample period, the CPS provides two variables on the number of children in the family: children under age 6 or children under age 18. The model uses the number of children under age 6 living in the family, because that variable is expected to have the greater impact on women's labor force and earnings behavior.

Wages

Hourly wages are constructed by dividing total earnings by the total number of work hours. People with zero work hours are assumed to have an hourly wage of zero. The hourly wage is recomputed for respondents with very high or very low hourly wages, as follows:

Minimum Wage Restriction

For respondents reporting an hourly wage under $2, the hourly wage is set equal to the larger of $2 or total earnings divided by 2,080 hours.

Maximum Wage Restriction

For respondents reporting an hourly wage that exceeds $100, the model first assumes that a person's maximum wage is a function of age. Thus, the maximum wage equals 75 minus 16 plus the person's age, capped at 100. The model then assumes people work the minimum of 2,080 hours or the number of hours derived by dividing total earnings by this maximum wage. The person's hourly wage is then recomputed.

Unemployment

The number of weeks unemployed and hours unemployed are both used in the calculation of full-time equivalent (FTE) earnings (see below); for consistency, outlying values are adjusted.

Weeks Unemployed

The number of weeks unemployed is assumed to be the smaller of reported weeks unemployed or 52 minus the number of weeks worked the previous year.

Hours Unemployed

If the number of work hours and unemployment hours exceed 2,080 and the person reports positive unemployment hours, unemployment hours are capped at 2,080 minus the number of work hours. A floor of one hour of unemployment for these respondents is also assumed.

Work Hours

For people reporting positive earnings but no work hours, work hours are assumed to equal the average number of work hours by year, age, sex, education, and earnings.[1] The hourly wage is then recomputed for those workers based on the imputed number of work hours. Respondents for whom average hours do not exist and who fall into a demographic cell with average work hours of zero are dropped from the sample.

1. Earnings are grouped into six categories: $0 to $4,999; $5,000 to $14,999; $15,000 to $29,999; $30,000 to $49,999; $50,000 to $99,999; and $100,000 and over.

Full-Time Equivalent Earnings

For respondents whose reported earnings are below FTE earnings because of an unemployment spell, FTE earnings are constructed as a function of a respondent's reported (or adjusted) work hours, unemployment hours, and total earnings. For simplicity, call the sum of work hours and unemployment hours total hours and the ratio of unemployment hours to work hours ratio hours.

For people with positive unemployment hours:
FTE earnings = total earnings × (ratio hours + 1).

For people with less than 2,080 but at least 1,750 total hours:
FTE earnings = total earnings × (ratio hours +1) × (2,080/total hours).

For people with total hours less than 1,500:
FTE earnings = total earnings × (ratio hours +1) × (2,080/total hours) × 1.15.

As discussed earlier, full-time workers receive a premium of about 15 percent over those who work a higher number of hours but remain part time.

For people with total hours between 1,500 and 1,750, the full-time premium adjustment is phased out as total hours worked approaches full time. This adjustment is the product of three components. The first component is ratio hours plus one; the second component divides 2,080 by total hours (these two components are the same as for the second group). The third component subtracts 1,500 hours from total hours and divides by 250; this term is subtracted from one and is multiplied by 0.15 (the hours premium for this group). The resulting term is added to one and multiplied by the first two components:

FTE earnings = total earnings × (ratio hours + 1) × (2,080/total hours) × (1+0.15×[1-(total hours-1,500)/250]).

Appendix B: CBOLT Representative Sample Data

The Social Security Administration's Continuous Work History Sample (CWHS) is a 1 percent sample of all Social Security numbers ever issued. In addition to taxable Old-Age, Survivors, and Disability Insurance (OASDI) wages and total compensation, the CWHS contains information on an individual's sex, race, and year of birth. Data are collected for people with wage and salary earnings subject to Social Security taxes, those with earnings not subject to Social Security taxes, and those with both.[1] The CWHS is a restricted-use data set; it may not necessarily be a representative sample of the population because it includes a sample of all Social Security numbers ever issued, and as a consequence it can include people who have duplicate Social Security numbers (for example, if someone replaced his or her original number).

The CBOLT input from the CWHS contains approximately 300,000 observations in each year between 1983 and 2004, the most recent data available.

The CWHS contains five variables with information about earnings:

- Federal Insurance Contributions Act (FICA) earnings up to the taxable maximum, for the years 1951 through 2003. This variable corresponds to total earnings, including earnings from self-employment, covered by Social Security.

- Self-Employment Contributions Act portion of earnings, up to the taxable maximum, for the years 1980 through 2003.

- A measure of total compensation for the years 1980 through 2003, including total wages and tips. It does not include deferred compensation or self-employment earnings but does include earnings not covered by the Social Security system.

- Medicare earnings collected for the years 1983 through 2003, including Medicare earnings from self-employment.

- Medicare earnings from self-employment, collected separately for the years 1991 through 2003.

Both measures of Medicare earnings (items 4 and 5) are subject to the taxable maximum. When Medicare payroll taxes were first levied in 1966, the same taxable maxi-

1. Creston Smith, "The Social Security Administration's Continuous Work History Sample," *Social Security Bulletin,* vol. 52, no. 10 (1989), pp. 20–28.

mum as FICA was applied until 1990. However, beginning in 1991, the Medicare taxable maximum became larger than the Social Security maximum. In 1991, the Medicare taxable maximum was $125,000, in 1992 it was $130,200, and in 1993 it was $135,000. Since 1994, there has been no limit on the taxable earnings of Medicare.

Because the model is concerned with earnings records back to 1984, there is a series of imputation procedures to create earnings not recorded because they exceeded the taxable maximum.

Deferred Compensation

Deferred compensation is defined as the maximum of zero or the difference between the sum of Medicare earnings and Medicare self-employment earnings minus total compensation. Individuals with total wages between 1.5 and 2 times the average wage are assumed to be unaffected by the taxable maximum. For this group of workers, the distribution of the ratio of deferred compensation to total wages is computed.

Each person with positive total compensation and with a level of deferred compensation that exceeds the taxable maximum is then randomly assigned to a percentile within the deferred compensation/total wage share distribution. Total wages for those workers are then incremented on the basis of the randomly assigned percentile; those incremented total wages are used to compute the level of deferred compensation above the taxable maximum.

Late Postings

Individuals 62 or younger whose earnings dropped by more than half between the last year reported in the CWHS (year t) and the previous year (t-1) are assumed to be late postings—people whose earnings were recorded after the CWHS data were collected. For those workers, the distribution of wage growth is calculated between years t-2 and t-1.[2] Workers with late postings are then randomly assigned a percentile within that distribution, and an associated level of positive wage growth is then applied to their earnings.

Self-Employment Earnings

Prior to 1993, Medicare earnings from self-employment were subject to the taxable maximum; hence, earnings above that level are imputed for self-employed individuals in those years. For each individual with earnings at the taxable maximum in any of those years, the first step is to check how many of the two previous and two following years the worker also had earnings at the taxable maximum. Individuals who hit the

2. In computing this distribution, individuals for whom income more than doubled from year t-2 to year t-1 and individuals without income in year t-2 are not included.

taxable maximum in a higher number of surrounding years should have higher imputed self-employment earnings.

For individuals with taxable maximum earnings in four surrounding years, the ratio of earnings to average earnings is computed in year t+1 and is applied to the current year (t) to impute earnings above the taxable maximum. The calculation proceeds recursively from 1994 to 1984.

For individuals with fewer than four observations of taxable maximum earnings in surrounding years, the strategy is slightly different. Using March CPS data, the portion of individuals with earnings at the taxable maximum is computed in each year. In the CWHS, this same statistic is computed for individuals whose earnings reach the taxable maximum in the year of observation and in one, two, and three years surrounding the year of observation.

Next, using the CPS distribution, average earnings for a similar worker are imputed to the CWHS. For example, suppose that, in 1960, 60 percent of males earned below the taxable maximum, 0.7 percent earned above the taxable maximum but did not do so in surrounding years, 1.4 percent earned above the taxable maximum and also did so in one surrounding year, 4.6 percent did so in 1960 and in two surrounding years, 6.3 did so percent in 1960 and in three surrounding years, and 27 percent earned above the taxable maximum in 1960 and in four surrounding years. Then an individual with earnings at the taxable maximum in 1960 and in two surrounding years is assigned the average earnings for the 62nd-67th percentiles of the CPS distribution of workers ages 16 to 90 in that year.[3]

Earnings Above the Taxable Maximum

The earnings data available between 1951 and 1983 are from the individual's FICA record and, because Social Security taxes were capped at the taxable maximum, earnings above this level must be imputed. The strategy to impute earnings above the taxable maximum is the same as the one used to impute self-employment earnings from 1984 to 1993.

3. The 62nd percentile is used because 60 percent plus 0.7 percent plus 1.4 percent equals 62.1 percent. Then take the average earnings over the next 5 percentile points.

Appendix C:
Labor Force Equations
Used to Model Persistence

This appendix contains estimated coefficients in equations used to implement the error-correction mechanism for labor force outcomes as described in the text. Each set of results included here has a counterpart in the basic projection modules described in the main text. In each case, the only difference in each case is the addition of actual earnings as an independent variable, which makes it possible to introduce persistence through time. The method used to introduce persistence is described in detail in the body of the paper. See the tables that follow for the list of estimated coefficients.

Table C-1.

Historical Full-Time Employment Logit Coefficients for Men

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School
			Never Married	Married	High School Graduate	Some College	College Graduate	
16	-3.5081	-0.5115	1.2027	3.4278				-2.7214
17	-7.0808	-0.2746	-0.5601	0.6464				-1.2179
18	-6.6855	-0.5091	-0.4348	0.3100				-1.2825
19	-4.8507	-0.6699	-0.4888	0.1165				-1.4601
20	-3.6736	-0.7699	-0.5123	0.0450				-1.5241
21	-3.5459	-0.8310	-0.5514	0.0287				-1.5612
22	-3.0818	-0.9068	-0.5464	0.0297				-1.5698
23	-2.6572	-0.9859	-0.5289	0.0441				-1.5769
24	-2.4151	-1.0235	-0.4856	0.0738				-1.5547
25	-3.6634	-1.0799	-0.1646	0.2312	-0.0962	-0.9898	-1.4675	
26	-3.0461	-1.1095	-0.1323	0.2435	-0.0624	-0.8202	-1.3113	
27	-2.3144	-1.1243	-0.1029	0.2542	-0.0329	-0.6696	-1.1673	
28	-1.6967	-1.1115	-0.0749	0.2668	-0.0084	-0.5451	-1.0389	
29	-1.3175	-1.1276	-0.0617	0.2696	0.0078	-0.4441	-0.9401	
30	-1.1454	-1.1212	-0.0625	0.2649	0.0245	-0.3574	-0.8595	
31	-1.0842	-1.1738	-0.0597	0.2776	0.0395	-0.2903	-0.7849	
32	-0.9464	-1.2127	-0.0623	0.2823	0.0555	-0.2325	-0.7219	
33	-0.7177	-1.2690	-0.0652	0.2851	0.0683	-0.1864	-0.6755	
34	-0.3751	-1.3085	-0.0641	0.2923	0.0794	-0.1479	-0.6388	
35	-0.0774	-1.3406	-0.0617	0.2946	0.0856	-0.1213	-0.6114	
36	0.1093	-1.3322	-0.0732	0.2800	0.0824	-0.1013	-0.5902	
37	0.2136	-1.3179	-0.0863	0.2717	0.0816	-0.0896	-0.5690	
38	0.2176	-1.2759	-0.0964	0.2641	0.0823	-0.0881	-0.5521	
39	0.1421	-1.2578	-0.1068	0.2531	0.0893	-0.0902	-0.5317	
40	0.0646	-1.2792	-0.1173	0.2522	0.0976	-0.0861	-0.5050	
41	0.2318	-1.3331	-0.1068	0.2630	0.1136	-0.0757	-0.4885	
42	0.2929	-1.4015	-0.0961	0.2739	0.1224	-0.0672	-0.4855	
43	0.2634	-1.5095	-0.0937	0.2762	0.1229	-0.0486	-0.4744	
44	0.1924	-1.5997	-0.0846	0.2888	0.1081	-0.0345	-0.4738	
45	0.0828	-1.6542	-0.0628	0.2916	0.0944	-0.0264	-0.4773	
46	0.0952	-1.6826	-0.0510	0.2913	0.0780	-0.0378	-0.4815	
47	0.3129	-1.7198	-0.0445	0.2834	0.0639	-0.0504	-0.4700	
48	0.5705	-1.7472	-0.0338	0.2862	0.0563	-0.0755	-0.4661	
49	0.9454	-1.7891	-0.0400	0.2725	0.0501	-0.1071	-0.4692	
50	1.3505	-1.8399	-0.0589	0.2666	0.0407	-0.1401	-0.4816	
51	2.1097	-1.8786	-0.0622	0.2510	0.0293	-0.1449	-0.4822	
52	2.5267	-1.8860	-0.0564	0.2432	0.0049	-0.1802	-0.5195	
53	2.9702	-1.8723	-0.0437	0.2283	-0.0224	-0.2124	-0.5689	
54	3.3269	-1.8565	-0.0043	0.2190	-0.0439	-0.2363	-0.6157	
55	3.6342	-1.8451	0.0409	0.1992	-0.0665	-0.2609	-0.6685	
56	3.8682	-1.8841	0.0931	0.1796	-0.0848	-0.2853	-0.7322	
57	4.0948	-1.9345	0.1226	0.1500	-0.1059	-0.3064	-0.7933	
58	4.0254	-2.0174	0.1506	0.1132	-0.1243	-0.3239	-0.8395	

Unemployment Spell	Earnings (*1,000)	Birth Cohort (By first year of cohort)							
		1910	1920	1930	1940	1950	1960	1970	1980
1.7884	0.2722							-0.7135	-0.3357
1.3620	0.2802							-0.0398	0.1196
1.2354	0.2702							0.2678	0.3886
1.1638	0.2548							0.4099	0.5233
1.0579	0.2367							0.4708	0.5734
0.9891	0.2258						0.4373	0.8456	
0.9003	0.2124						0.4574	0.8524	
0.8113	0.1994						0.4700	0.8369	
0.7296	0.1878						0.4629	0.7821	
0.6015	0.1882						0.3218	0.5475	
0.5269	0.1771						0.3072	0.5066	
0.4647	0.1667						0.2924	0.4731	
0.4040	0.1566						0.2772	0.4388	
0.3390	0.1477						0.2662	0.4116	
0.2782	0.1403						0.2588	0.3829	
0.2188	0.1339					0.0968	0.3596		
0.1661	0.1277					0.0946	0.3429		
0.1212	0.1223					0.0957	0.3296		
0.0933	0.1174					0.0913	0.3120		
0.0672	0.1132					0.0869	0.2965		
0.0513	0.1097					0.0856	0.2898		
0.0384	0.1067					0.0892	0.2841		
0.0328	0.1047					0.0914	0.2820		
0.0254	0.1028					0.1033	0.2845		
0.0280	0.1008					0.1143	0.2863		
0.0254	0.0986				0.0125	0.1906			
0.0356	0.0970				0.0384	0.2195			
0.0437	0.0953				0.0645	0.2510			
0.0623	0.0939				0.0926	0.2800			
0.0741	0.0926				0.1163	0.3105			
0.0887	0.0915				0.1184	0.3281			
0.0973	0.0903				0.1092	0.3319			
0.1110	0.0892				0.1024	0.3300			
0.1009	0.0877				0.0937	0.3319			
0.0977	0.0863				0.0860	0.3324			
0.0822	0.0845			-0.0066	0.1665				
0.0933	0.0833			-0.0032	0.1653				
0.1035	0.0818			-0.0087	0.1574				
0.1406	0.0807			-0.0140	0.1434				
0.1808	0.0801			-0.0193	0.1280				
0.2274	0.0797			-0.0208	0.1192				
0.2798	0.0791			-0.0260	0.1052				
0.3483	0.0785			-0.0279	0.0964				

Continued

Table C-1.

Continued

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School
			Never Married	Married	High School Graduate	Some College	College Graduate	
59	**3.4877**	**-2.0836**	**0.1625**	**0.0748**	**-0.1374**	**-0.3339**	**-0.8808**	
60	**2.7005**	**-2.1304**	**0.1769**	0.0445	**-0.1464**	**-0.3364**	**-0.9104**	
61	**0.2230**	**-2.1880**	**0.1920**	0.0161	**-0.1442**	**-0.3255**	**-0.9028**	
62	**0.2608**	**-2.1350**	**0.2098**	0.0043	**-0.1375**	**-0.3086**	**-0.8822**	
63	**0.2776**	**-2.0839**	**0.2411**	0.0018	**-0.1249**	**-0.2851**	**-0.8573**	
64	**0.2568**	**-2.0204**	**0.2825**	-0.0021	**-0.1188**	**-0.2680**	**-0.8150**	
65	**0.2035**	**-1.9465**	**0.3270**	-0.0204	**-0.1099**	**-0.2546**	**-0.7582**	
66	**0.1452**	**-1.8795**	**0.3557**	-0.0507	**-0.0942**	**-0.2260**	**-0.7051**	
67	**1.3416**	**-1.7343**	**0.3986**	**-0.0977**	**-0.0828**	**-0.2133**	**-0.6603**	
68	**1.5318**	**-1.5903**	**0.4045**	**-0.1563**	**-0.0791**	**-0.2150**	**-0.6179**	
69	**1.2020**	**-1.4667**	**0.4042**	**-0.2011**	**-0.0716**	**-0.2203**	**-0.6042**	
70	-0.0925	**-1.2679**	**0.1586**	**-0.3033**	-0.0137	**-0.1563**	**-0.5210**	

Source: Congressional Budget Office.

Note: Coefficient values shown in bold indicate statistical significance at the 5 percent level.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

Unemployment Spell	Earnings (*1,000)	Birth Cohort (By first year of cohort)							
		1910	1920	1930	1940	1950	1960	1970	1980
0.4146	**0.0772**			-0.0347	**0.0948**				
0.4927	**0.0751**			-0.0412	**0.0949**				
0.6056	**0.0729**		**-0.1327**	**-0.0714**					
0.7197	**0.0697**		**-0.1476**	**-0.0672**					
0.8225	**0.0667**		**-0.1478**	-0.0363					
0.9191	**0.0642**		**-0.1282**	0.0376					
1.0007	**0.0626**		**-0.0860**	**0.1497**					
1.0261	**0.0612**		-0.0319	**0.2626**					
1.0033	**0.0609**		0.0165	**0.3376**					
0.9659	**0.0609**		0.0533	**0.3978**					
0.9406	**0.0614**		**0.0849**	**0.4342**					
0.9579	**0.0614**	0.0595	**0.2274**						

Table C-2.

Historical Full-Time Employment Logit Coefficients for Women

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School
			Never Married	Married	High School Graduate	Some College	College Graduate	
16	-2.4692	0.0873	-1.4552	-0.3229				-2.0984
17	-12.0925	-0.0911	-0.8113	-0.2711				-0.9996
18	-7.6531	-0.3526	-0.3854	-0.2097				-1.1879
19	-4.7548	-0.5829	-0.2632	-0.1910				-1.3390
20	-3.5650	-0.6692	-0.2688	-0.2617				-1.3482
21	-3.1438	-0.7063	-0.2950	-0.3078				-1.3360
22	-2.6316	-0.6943	-0.3087	-0.3591				-1.3045
23	-2.1770	-0.6712	-0.3115	-0.4102				-1.2789
24	-1.8496	-0.6061	-0.2945	-0.4486				-1.2366
25	-2.5568	-0.5451	-0.0892	-0.3390	-0.1288	-0.6844	-1.2580	
26	-1.7559	-0.4644	-0.0535	-0.3754	-0.1393	-0.6044	-1.2059	
27	-1.0582	-0.4278	-0.0093	-0.4060	-0.1439	-0.5620	-1.1748	
28	-0.5858	-0.3952	0.0271	-0.4398	-0.1513	-0.5421	-1.1721	
29	-0.3318	-0.3555	0.0541	-0.4748	-0.1577	-0.5353	-1.1853	
30	-0.2646	-0.3394	0.0738	-0.5085	-0.1648	-0.5347	-1.2050	
31	-0.4377	-0.3527	0.0950	-0.5367	-0.1802	-0.5438	-1.2422	
32	-0.5038	-0.3452	0.1098	-0.5671	-0.1961	-0.5534	-1.2801	
33	-0.5360	-0.3441	0.1279	-0.5875	-0.2170	-0.5770	-1.3286	
34	-0.5249	-0.3634	0.1506	-0.6059	-0.2396	-0.6058	-1.3852	
35	-0.5499	-0.3867	0.1690	-0.6218	-0.2574	-0.6306	-1.4315	
36	-0.6303	-0.4062	0.1734	-0.6415	-0.2744	-0.6513	-1.4660	
37	-0.7520	-0.4430	0.1754	-0.6564	-0.2814	-0.6668	-1.4897	
38	-0.8792	-0.4764	0.1759	-0.6721	-0.2756	-0.6677	-1.5010	
39	-1.0392	-0.5052	0.1747	-0.6840	-0.2645	-0.6613	-1.5021	
40	-1.1779	-0.5335	0.1785	-0.6939	-0.2586	-0.6574	-1.5059	
41	-1.3542	-0.5648	0.1929	-0.6950	-0.2564	-0.6577	-1.5168	
42	-1.4076	-0.5911	0.1991	-0.6950	-0.2493	-0.6521	-1.5206	
43	-1.4916	-0.6267	0.2016	-0.6944	-0.2430	-0.6463	-1.5200	
44	-1.5640	-0.6721	0.1903	-0.6932	-0.2380	-0.6331	-1.5128	
45	-1.6191	-0.7064	0.1732	-0.6890	-0.2233	-0.6149	-1.4939	
46	-1.6023	-0.7304	0.1452	-0.6867	-0.2096	-0.5952	-1.4760	
47	-1.4961	-0.7479	0.1181	-0.6823	-0.1986	-0.5780	-1.4578	
48	-1.3454	-0.7501	0.0876	-0.6723	-0.1902	-0.5664	-1.4367	
49	-1.1676	-0.7438	0.0760	-0.6628	-0.1798	-0.5648	-1.4256	
50	-0.9726	-0.7457	0.0760	-0.6538	-0.1761	-0.5629	-1.4264	
51	-0.7267	-0.7394	0.0904	-0.6422	-0.1764	-0.5591	-1.4128	
52	-0.6514	-0.7413	0.1060	-0.6297	-0.1760	-0.5647	-1.4192	
53	-0.5597	-0.7586	0.1221	-0.6237	-0.1803	-0.5644	-1.4325	
54	-0.5079	-0.7732	0.1278	-0.6114	-0.1922	-0.5660	-1.4518	
55	-0.4627	-0.7893	0.1164	-0.5993	-0.2040	-0.5720	-1.4720	
56	-0.2186	-0.8509	0.1165	-0.5878	-0.2139	-0.5725	-1.4946	
57	0.0885	-0.9367	0.1016	-0.5846	-0.2180	-0.5662	-1.5020	
58	0.3087	-1.0984	0.0868	-0.5820	-0.2157	-0.5664	-1.5089	

Number of Children Under Age 6	Unemployment Spell	Earnings (*1,000)	Birth Cohort (By first year of cohort)							
			1910	1920	1930	1940	1950	1960	1970	1980
0.2280	1.6949	0.2925							-0.0696	0.2961
0.1546	1.2535	0.3517							-0.1496	0.1971
-0.0434	0.9969	0.3499							0.0478	0.2785
-0.1312	0.9083	0.3317							0.1679	0.3685
-0.1610	0.8293	0.3079							0.2089	0.3827
-0.1810	0.7795	0.2916						0.2173	0.4281	
-0.1966	0.7225	0.2737						0.2427	0.4314	
-0.2187	0.6740	0.2561						0.2636	0.4279	
-0.2438	0.6392	0.2396						0.2723	0.4047	
-0.3666	0.6656	0.2426						0.2550	0.3585	
-0.3884	0.6328	0.2286						0.2562	0.3618	
-0.4105	0.6129	0.2165						0.2522	0.3646	
-0.4291	0.5924	0.2065						0.2497	0.3696	
-0.4467	0.5720	0.1979						0.2505	0.3770	
-0.4555	0.5560	0.1904						0.2520	0.3814	
-0.4618	0.5374	0.1840					0.1679	0.4169		
-0.4639	0.5243	0.1785					0.1829	0.4233		
-0.4643	0.5236	0.1738					0.1952	0.4249		
-0.4585	0.5244	0.1702					0.2010	0.4177		
-0.4551	0.5241	0.1673					0.1990	0.4044		
-0.4514	0.5161	0.1646					0.1931	0.3867		
-0.4489	0.5023	0.1625					0.1848	0.3632		
-0.4446	0.4884	0.1608					0.1758	0.3403		
-0.4430	0.4828	0.1595					0.1719	0.3228		
-0.4330	0.4844	0.1587					0.1729	0.3105		
-0.4161	0.4932	0.1583				0.1244	0.3154			
-0.3918	0.5143	0.1584				0.1294	0.3144			
-0.3609	0.5364	0.1590				0.1345	0.3154			
-0.3185	0.5495	0.1593				0.1353	0.3147			
-0.2824	0.5530	0.1594				0.1340	0.3148			
-0.2339	0.5547	0.1599				0.1347	0.3137			
-0.1989	0.5594	0.1600				0.1425	0.3183			
-0.1569	0.5582	0.1601				0.1435	0.3198			
-0.1192	0.5675	0.1609				0.1487	0.3218			
-0.0871	0.5859	0.1616				0.1552	0.3234			
-0.0664	0.5955	0.1625			0.0708	0.2665				
-0.0615	0.6080	0.1639			0.0605	0.2498				
-0.0795	0.6236	0.1649			0.0450	0.2350				
-0.1010	0.6404	0.1658			0.0299	0.2264				
-0.0928	0.6577	0.1670			0.0187	0.2257				
	0.6836	0.1674			0.0080	0.2222				
	0.7076	0.1671			0.0032	0.2205				
	0.7410	0.1667			0.0018	0.2213				

Continued

Table C-2.

Continued

Number of Children Under Age 6	Unemployment Spell	Earnings (*1,000)	Birth Cohort (By first year of cohort)							
			1910	1920	1930	1940	1950	1960	1970	1980
	0.7680	**0.1651**			0.0040	**0.2145**				
	0.8030	**0.1626**			0.0030	**0.1958**				
	0.8434	**0.1601**		-0.0557	0.0313					
	0.9037	**0.1572**		-0.0528	0.0261					
	0.9760	**0.1546**		-0.0363	0.0369					
	1.0592	**0.1527**		-0.0038	**0.0682**					
	1.1335	**0.1510**		0.0282	**0.1226**					
	1.1964	**0.1500**		0.0677	**0.1855**					
	1.2318	**0.1497**		**0.0988**	**0.2472**					
	1.2250	**0.1499**		**0.1170**	**0.3040**					
	1.2273	**0.1498**		**0.1199**	**0.3496**					
	0.9712	**0.1349**	0.1227	**0.2884**						

Source: Congressional Budget Office.

Note: Coefficient values shown in bold indicate statistical significance at the 5 percent level.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

Number of Children Under Age 6	Unemployment Spell	Earnings (*1,000)	Birth Cohort (By first year of cohort)							
			1910	1920	1930	1940	1950	1960	1970	1980
	0.7680	**0.1651**			0.0040	**0.2145**				
	0.8030	**0.1626**			0.0030	**0.1958**				
	0.8434	**0.1601**		-0.0557	0.0313					
	0.9037	**0.1572**		-0.0528	0.0261					
	0.9760	**0.1546**		-0.0363	0.0369					
	1.0592	**0.1527**		-0.0038	**0.0682**					
	1.1335	**0.1510**		0.0282	**0.1226**					
	1.1964	**0.1500**		0.0677	**0.1855**					
	1.2318	**0.1497**		**0.0988**	**0.2472**					
	1.2250	**0.1499**		**0.1170**	**0.3040**					
	1.2273	**0.1498**		**0.1199**	**0.3496**					
	0.9712	**0.1349**	0.1227	**0.2884**						

Table C-3.

Historical Part-Time Hours Ordered Logit Coefficients for Men

Age Group	Age Coefficient	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School	Unemployment Rate	Earnings (*1,000)	Trend
			Never Married	Married	High School Graduate	Some College	College Graduate				
16		-0.0606	**1.2002**	**0.9672**				**-0.4733**	**1.2596**	**0.5604**	-0.0110
17	0.2637	**-0.1111**	0.2689	**0.8374**				**-0.2259**	**1.1633**	**0.3886**	-0.0014
18	**0.0909**	**-0.1195**	-0.1658	0.3352				**-0.3989**	**1.2193**	**0.3884**	**0.0154**
19	**0.0367**	**-0.1750**	**-0.2697**	**0.3202**				**-0.5112**	**1.1812**	**0.3239**	**0.0232**
20	**0.0158**	**-0.2200**	**-0.3130**	**0.2477**				**-0.5478**	**1.1333**	**0.2737**	**0.0277**
21	**0.0114**	**-0.2740**	**-0.3542**	**0.2170**				**-0.5472**	**1.0925**	**0.2368**	**0.0143**
22	0.0007	**-0.3356**	**-0.3651**	**0.1797**				**-0.5486**	**1.0464**	**0.2018**	**0.0165**
23	-0.0069	**-0.4189**	**-0.3727**	**0.1230**				**-0.5580**	**0.9990**	**0.1723**	**0.0181**
24	-0.0055	**-0.5018**	-0.3491	**0.0901**				**-0.5292**	**0.9638**	**0.1477**	**0.0193**
25	**0.0342**	**-0.6469**	-0.0921	**0.1832**	**0.0697**	**-0.5104**	**-0.8128**		0.8781	**0.1339**	**0.0133**
26	**0.0165**	**-0.7643**	-0.0759	**0.1364**	0.0540	**-0.4341**	**-0.7767**		0.8493	**0.1170**	**0.0153**
27	0.0024	**-0.8474**	-0.0422	**0.1155**	0.0396	**-0.3713**	**-0.7439**		0.8322	**0.1038**	**0.0173**
28	-0.0063	**-0.8590**	-0.0107	**0.1100**	0.0386	**-0.3224**	**-0.6999**		0.8212	**0.0928**	**0.0187**
29	-0.0084	**-0.8604**	0.0209	**0.1091**	0.0412	**-0.2817**	**-0.6565**		0.8092	**0.0854**	**0.0181**
30	-0.0019	**-0.8618**	0.0333	**0.1183**	0.0364	**-0.2531**	**-0.6044**		0.8044	**0.0804**	**0.0166**
31	0.0037	**-0.8967**	0.0428	**0.1214**	0.0278	**-0.2369**	**-0.5649**		0.7881	**0.0759**	**0.0090**
32	-0.0038	**-0.9077**	0.0350	**0.1124**	0.0203	**-0.2171**	**-0.5257**		0.7689	**0.0718**	**0.0102**
33	**-0.0137**	**-0.9205**	0.0309	**0.1031**	0.0120	**-0.2154**	**-0.4968**		0.7437	**0.0686**	**0.0134**
34	**-0.0232**	**-0.8878**	0.0124	**0.0959**	0.0111	**-0.2127**	**-0.4616**		0.7249	**0.0649**	**0.0140**
35	**-0.0227**	**-0.8460**	0.0040	**0.0901**	0.0083	**-0.2084**	**-0.4372**		0.7030	**0.0611**	**0.0132**
36	**-0.0186**	**-0.7961**	-0.0022	**0.0875**	0.0138	**-0.1892**	**-0.4026**		0.6903	**0.0580**	**0.0117**
37	**-0.0154**	**-0.7683**	-0.0029	**0.0926**	0.0173	**-0.1695**	**-0.3699**		0.6717	**0.0549**	**0.0100**
38	-0.0092	**-0.7922**	-0.0029	**0.0976**	0.0167	**-0.1405**	**-0.3473**		0.6624	**0.0521**	0.0075
39	-0.0116	**-0.8622**	0.0042	**0.1001**	0.0006	**-0.1153**	**-0.3403**		0.6482	**0.0496**	**0.0095**
40	**-0.0159**	**-0.9433**	0.0020	**0.0992**	-0.0147	**-0.1153**	**-0.3408**		0.6328	**0.0475**	**0.0129**
41	-0.0040	**-1.0214**	-0.0094	**0.0952**	-0.0463	**-0.1480**	**-0.3693**		0.6170	**0.0460**	0.0051
42	-0.0025	**-1.0853**	-0.0172	**0.0948**	-0.0675	**-0.1828**	**-0.3931**		0.6168	**0.0454**	0.0058
43	-0.0060	**-1.0847**	-0.0287	**0.0860**	-0.0724	**-0.2235**	**-0.3870**		0.6219	**0.0455**	0.0067
44	-0.0110	**-1.0738**	-0.0352	0.0758	-0.0665	**-0.2719**	**-0.3712**		0.6284	**0.0461**	0.0079
45	-0.0141	**-1.0619**	-0.0374	0.0677	-0.0745	**-0.3077**	**-0.3619**		0.6462	**0.0469**	0.0089
46	**-0.0157**	**-1.0509**	-0.0274	0.0677	-0.0756	**-0.3204**	**-0.3445**		0.6705	**0.0471**	0.0091
47	**-0.0160**	**-1.0286**	-0.0230	0.0591	-0.0745	**-0.3298**	**-0.3228**		0.6888	**0.0469**	0.0087
48	-0.0183	**-1.0354**	-0.0320	0.0636	**-0.0981**	**-0.3299**	**-0.3244**		0.7066	**0.0464**	0.0089
49	**-0.0215**	**-1.0245**	-0.0493	0.0652	**-0.1186**	**-0.3181**	**-0.3298**		0.7349	**0.0456**	0.0089
50	**-0.0217**	**-1.0152**	-0.0755	0.0592	**-0.1197**	**-0.2998**	**-0.3304**		0.7544	**0.0448**	0.0075
51	**-0.0331**	**-0.9632**	-0.0962	0.0476	**-0.1171**	**-0.2889**	**-0.3421**		0.7611	**0.0443**	0.0112
52	**-0.0388**	**-0.9661**	-0.1070	0.0311	**-0.1236**	**-0.2866**	**-0.3703**		0.7723	**0.0441**	0.0087
53	**-0.0435**	**-0.9757**	-0.0824	0.0104	**-0.1141**	**-0.2902**	**-0.4140**		0.7843	**0.0437**	0.0077
54	**-0.0500**	**-0.9960**	-0.0279	-0.0017	**-0.1071**	**-0.2920**	**-0.4609**		0.7908	**0.0432**	0.0064
55	**-0.0543**	**-0.9999**	0.0388	-0.0060	**-0.1151**	**-0.3020**	**-0.5206**		0.8135	**0.0428**	0.0063
56	**-0.0570**	**-1.0350**	0.0910	-0.0103	**-0.1238**	**-0.3132**	**-0.5783**		0.8485	**0.0424**	0.0070
57	**-0.0579**	**-0.9942**	0.1265	-0.0079	**-0.1342**	**-0.3149**	**-0.6289**		0.8742	**0.0422**	0.0078
58	**-0.0390**	**-0.7388**	0.1272	-0.0114	**-0.1473**	**-0.3121**	**-0.6723**		0.8979	**0.0426**	0.0057

Birth Cohort (By first year of cohort)								Part-Time Category Threshold					
1910	1920	1930	1940	1950	1960	1970	1980	1	2	3	4	5	6
						0.1093	0.2384	0.8352	2.6865	3.8015	4.6772	6.0286	7.0324
						0.1001	**0.1535**	4.1766	5.8423	6.8128	7.6112	8.8083	9.8014
						0.0575	-0.0207	0.7552	2.4833	3.4881	4.2908	5.5588	6.5919
						0.0217	**-0.1226**	-0.5168	1.2003	2.1795	2.9334	4.1404	5.1141
						-0.0163	**-0.1994**	-1.0928	0.5990	1.5525	2.2739	3.4346	4.3715
					0.1945	**0.2806**		-1.3185	0.3571	1.2901	1.9860	3.1100	4.0200
					0.1776	**0.2381**		-1.6976	-0.0487	0.8596	1.5323	2.6238	3.5154
					0.1650	**0.1920**		-2.0100	-0.4008	0.4826	1.1416	2.2045	3.0821
					0.1276	**0.1137**		-2.0658	-0.5185	0.3359	0.9856	2.0225	2.8855
					0.0571	0.0319		-1.3665	0.1119	0.9438	1.6039	2.6434	3.5153
					0.0148	-0.0528		-1.8485	-0.4328	0.3705	1.0321	2.0578	2.9174
					-0.0241	**-0.1287**		-2.2428	-0.8720	-0.0900	0.5733	1.5888	2.4313
					-0.0562	**-0.1941**		-2.4929	-1.1583	-0.3943	0.2653	1.2735	2.0964
					-0.0636	**-0.2076**		-2.5793	-1.2603	-0.5062	0.1528	1.1578	1.9639
					-0.0617	**-0.1869**		-2.4223	-1.0979	-0.3499	0.2996	1.3024	2.0942
				0.0141	0.0073			-2.3243	-1.0031	-0.2589	0.3848	1.3844	2.1644
				-0.0268	-0.0436			-2.6016	-1.2908	-0.5465	0.0907	1.0839	1.8547
				-0.0733	-0.1295			-2.9521	-1.6512	-0.9068	-0.2745	0.7048	1.4706
				-0.0829	-0.1565			-3.2884	-2.0076	-1.2655	-0.6444	0.3252	1.0908
				-0.0679	-0.1475			-3.2830	-2.0364	-1.2949	-0.6792	0.2826	1.0507
				-0.0326	-0.1066			-3.1203	-1.9045	-1.1667	-0.5592	0.3955	1.1641
				-0.0071	-0.0759			-3.0036	-1.8050	-1.0797	-0.4787	0.4666	1.2326
				0.0193	-0.0315			-2.7922	-1.6044	-0.8833	-0.2861	0.6587	1.4211
				-0.0155	-0.0824			-2.8946	-1.7140	-0.9960	-0.3960	0.5386	1.2991
				-0.0728	-0.1596			-3.0801	-1.8983	-1.1813	-0.5777	0.3420	1.0965
			0.1536	0.1039				-2.6219	-1.4306	-0.7147	-0.1051	0.8019	1.5557
			0.1426	0.0758				-2.5982	-1.4137	-0.6859	-0.0722	0.8246	1.5832
			0.1262	0.0486				-2.7473	-1.5826	-0.8503	-0.2343	0.6514	1.4145
			0.0823	0.0066				-2.9599	-1.8138	-1.0838	-0.4689	0.4183	1.1826
			0.0403	-0.0200				-3.0897	-1.9536	-1.2280	-0.6191	0.2683	1.0395
			0.0100	-0.0267				-3.1465	-2.0247	-1.2992	-0.6939	0.1951	0.9697
			-0.0192	-0.0228				-3.1701	-2.0431	-1.3307	-0.7278	0.1687	0.9436
			-0.0562	-0.0358				-3.3129	-2.1700	-1.4739	-0.8692	0.0339	0.8098
			-0.0569	-0.0227				-3.4731	-2.3286	-1.6413	-1.0294	-0.1289	0.6491
			-0.0425	0.0093				-3.4970	-2.3629	-1.6834	-1.0628	-0.1567	0.6186
		-0.0535	-0.1178					-4.0804	-2.9570	-2.2891	-1.6683	-0.7496	0.0245
		-0.0276	-0.0573					-4.3763	-3.2774	-2.6096	-1.9860	-1.0625	-0.2928
		-0.0312	-0.0366					-4.6262	-3.5604	-2.8851	-2.2638	-1.3357	-0.5694
		-0.0394	-0.0444					-5.0090	-3.9574	-3.2762	-2.6632	-1.7284	-0.9675
		-0.0615	-0.0672					-5.2683	-4.2206	-3.5401	-2.9320	-1.9939	-1.2380
		-0.0825	-0.0980					-5.4487	-4.4017	-3.7180	-3.1062	-2.1749	-1.4256
		-0.1029	-0.1301					-5.4978	-4.4547	-3.7759	-3.1641	-2.2350	-1.4894
		-0.0769	-0.0781					-4.4178	-3.3681	-2.6979	-2.0850	-1.1535	-0.4093

Continued

Table C-3.

Continued

Age Group	Age Coefficient	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School	Unemployment Rate	Earnings (*1,000)	Trend
			Never Married	Married	High School Graduate	Some College	College Graduate				
59	**-0.0232**	**-0.6235**	0.1144	-0.0119	**-0.1651**	**-0.3196**	**-0.7110**		0.9294	**0.0431**	0.0042
60	**-0.0147**	**-0.5884**	0.0972	-0.0224	**-0.1724**	**-0.3281**	**-0.7352**		0.9476	**0.0436**	0.0031
61	c	**-0.5905**	0.0937	-0.0330	**-0.1808**	**-0.3376**	**-0.7461**		0.9672	**0.0448**	**0.0077**
62	c	**-0.5759**	0.1222	-0.0426	**-0.1808**	**-0.3355**	**-0.7507**		0.9973	**0.0460**	**0.0085**
63	c	**-0.5831**	**0.1535**	-0.0552	**-0.1752**	**-0.3279**	**-0.7423**		1.0304	**0.0465**	**0.0111**
64	c	**-0.5694**	**0.1662**	**-0.0806**	**-0.1610**	**-0.3135**	**-0.7274**		1.0557	**0.0473**	**0.0136**
65	c	**-0.5351**	**0.1796**	**-0.0925**	**-0.1436**	**-0.2916**	**-0.7037**		1.0835	**0.0483**	**0.0167**
66	c	**-0.4930**	**0.1776**	**-0.1013**	**-0.1225**	**-0.2672**	**-0.6817**		1.1180	**0.0488**	**0.0191**
67	-0.0078	**-0.4246**	0.1407	**-0.1098**	**-0.0984**	**-0.2502**	**-0.6480**		1.1203	**0.0491**	**0.0232**
68	-0.0102	**-0.3524**	0.1229	**-0.1016**	**-0.0704**	**-0.2292**	**-0.6093**		1.1153	**0.0498**	**0.0210**
69	-0.0116	**-0.2960**	0.1082	-0.0851	-0.0519	**-0.2112**	**-0.5834**		1.0935	**0.0497**	**0.0179**
70	**-0.0159**	**-0.2989**	0.1209	-0.0482	-0.0076	**-0.2260**	**-0.5462**		1.0553	**0.0470**	**0.0105**

Source: Congressional Budget Office.

Note: Coefficient values shown in bold indicate statistical significance at the 5 percent level. Statistical significance of the threshold values is not evaluated.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

c. Terms do not appear for ages 61 through 66 in order to isolate the effects of eligibility for Social Security retirement benefits at those ages.

Birth Cohort (By first year of cohort)								Part-Time Category Threshold					
1910	1920	1930	1940	1950	1960	1970	1980	1	2	3	4	5	6
		-0.0301	0.0107					-3.4846	-2.4318	-1.7624	-1.1450	-0.2055	0.5383
		0.0241	0.0900					-2.9668	-1.9192	-1.2464	-0.6224	0.3303	1.0768
	-0.0630	-0.0145						-2.0501	-1.0095	-0.3336	0.2945	1.2650	2.0180
	-0.0693	0.0236						-2.0146	-0.9772	-0.2937	0.3379	1.3300	2.0961
	-0.0875	0.0222						-1.9671	-0.9434	-0.2562	0.3775	1.3901	2.1599
	-0.1046	0.0039						-1.9192	-0.9092	-0.2236	0.4121	1.4432	2.2174
	-0.1299	-0.0310						-1.8412	-0.8410	-0.1559	0.4767	1.5204	2.2991
	-0.1398	-0.0486						-1.7466	-0.7581	-0.0749	0.5534	1.6104	2.3922
	-0.1793	-0.1287						-2.1486	-1.1731	-0.4958	0.1295	1.1925	1.9674
	-0.1570	-0.0913						-2.2183	-1.2482	-0.5726	0.0473	1.1090	1.8868
	-0.1214	-0.0321						-2.2513	-1.2855	-0.6117	0.0005	1.0551	1.8365
-0.0909	-0.0340							-2.5881	-1.6390	-0.9706	-0.3773	0.6629	1.4523

Table C-4.

Historical Part-Time Hours Ordered Logit Coefficients for Women

Age Group	Age Coefficient	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School	Number of Children Under Age 6	Unemployment Rate	Earnings (*1,000)	Trend
			Never Married	Married	High School Graduate	Some College	College Graduate					
16		-0.1290	-0.4792	-0.3328				-0.7377	0.0065	1.1441	0.7168	-0.0009
17	0.1791	-0.0498	-0.3769	-0.1214				-0.2341	-0.0075	0.8045	0.4266	0.0074
18	0.1237	-0.1091	-0.4113	-0.1863				-0.4568	-0.0877	1.0524	0.4186	0.0185
19	0.0356	-0.1455	-0.2981	-0.1426				-0.4928	-0.1238	1.1004	0.4066	0.0267
20	0.0123	-0.1651	-0.2934	-0.1844				-0.4919	-0.1363	1.0788	0.3494	0.0288
21	-0.0036	-0.1919	-0.3108	-0.2241				-0.4719	-0.1288	1.0826	0.3255	0.0185
22	-0.0195	-0.2175	-0.3176	-0.2643				-0.4515	-0.1294	1.0545	0.2849	0.0204
23	-0.0298	-0.2350	-0.3025	-0.2969				-0.4479	-0.1318	1.0312	0.2538	0.0216
24	-0.0358	-0.2374	-0.2778	-0.3233				-0.4287	-0.1383	1.0077	0.2295	0.0214
25	-0.0125	-0.2553	-0.0998	-0.2597	-0.0143	-0.3721	-0.8030		-0.2107	1.0149	0.2253	0.0171
26	-0.0291	-0.2624	-0.0643	-0.2831	-0.0422	-0.3426	-0.8255		-0.2229	0.9928	0.2115	0.0167
27	-0.0373	-0.2601	-0.0355	-0.3006	-0.0649	-0.3394	-0.8464		-0.2405	0.9794	0.2004	0.0176
28	-0.0374	-0.2530	-0.0239	-0.3217	-0.0882	-0.3542	-0.8748		-0.2569	0.9588	0.1905	0.0186
29	-0.0346	-0.2437	-0.0155	-0.3400	-0.1112	-0.3778	-0.9084		-0.2716	0.9396	0.1817	0.0201
30	-0.0317	-0.2273	-0.0100	-0.3504	-0.1198	-0.3884	-0.9344		-0.2880	0.9161	0.1736	0.0219
31	-0.0178	-0.2161	-0.0017	-0.3597	-0.1328	-0.4001	-0.9660		-0.3005	0.8971	0.1663	0.0139
32	-0.0153	-0.2138	0.0192	-0.3640	-0.1363	-0.4032	-0.9871		-0.3111	0.8799	0.1600	0.0154
33	-0.0141	-0.2152	0.0399	-0.3648	-0.1358	-0.3999	-0.9957		-0.3246	0.8666	0.1547	0.0178
34	-0.0136	-0.2378	0.0502	-0.3663	-0.1292	-0.3891	-0.9919		-0.3405	0.8524	0.1506	0.0201
35	-0.0141	-0.2708	0.0601	-0.3714	-0.1215	-0.3841	-0.9836		-0.3522	0.8345	0.1469	0.0216
36	-0.0108	-0.3057	0.0674	-0.3781	-0.1122	-0.3811	-0.9729		-0.3612	0.8042	0.1434	0.0217
37	-0.0087	-0.3412	0.0600	-0.3873	-0.1011	-0.3776	-0.9581		-0.3701	0.7719	0.1404	0.0211
38	-0.0055	-0.3714	0.0514	-0.3871	-0.0921	-0.3791	-0.9525		-0.3742	0.7496	0.1377	0.0193
39	-0.0001	-0.3729	0.0391	-0.3813	-0.0768	-0.3807	-0.9529		-0.3718	0.7318	0.1356	0.0174
40	0.0047	-0.3669	0.0243	-0.3705	-0.0620	-0.3800	-0.9513		-0.3743	0.7278	0.1341	0.0166
41	0.0136	-0.3665	-0.0035	-0.3577	-0.0551	-0.3766	-0.9534		-0.3819	0.7355	0.1331	0.0098
42	0.0148	-0.3540	-0.0323	-0.3501	-0.0566	-0.3707	-0.9622		-0.3799	0.7474	0.1323	0.0097
43	0.0125	-0.3575	-0.0534	-0.3544	-0.0541	-0.3596	-0.9586		-0.3799	0.7575	0.1316	0.0102
44	0.0080	-0.3777	-0.0511	-0.3577	-0.0632	-0.3496	-0.9455		-0.3826	0.7656	0.1302	0.0114
45	0.0049	-0.3922	-0.0433	-0.3571	-0.0692	-0.3306	-0.9265		-0.3801	0.7634	0.1291	0.0120
46	0.0025	-0.3937	-0.0226	-0.3570	-0.0648	-0.3104	-0.8980		-0.3693	0.7565	0.1284	0.0112
47	0.0000	-0.3929	-0.0053	-0.3469	-0.0568	-0.3003	-0.8686		-0.3629	0.7452	0.1277	0.0102
48	-0.0015	-0.3834	0.0020	-0.3315	-0.0533	-0.2887	-0.8427		-0.3448	0.7351	0.1273	0.0093
49	-0.0021	-0.3757	-0.0166	-0.3221	-0.0476	-0.2844	-0.8334		-0.3170	0.7365	0.1283	0.0091
50	-0.0028	-0.3733	-0.0392	-0.3185	-0.0514	-0.2898	-0.8356		-0.2793	0.7512	0.1289	0.0090
51	-0.0015	-0.3689	-0.0579	-0.3130	-0.0667	-0.3046	-0.8518		-0.2441	0.7697	0.1294	0.0084
52	-0.0050	-0.3944	-0.0625	-0.3096	-0.0783	-0.3160	-0.8663		-0.2229	0.8043	0.1298	0.0092
53	-0.0105	-0.4225	-0.0815	-0.3082	-0.0883	-0.3395	-0.8924		-0.1989	0.8347	0.1294	0.0095
54	-0.0163	-0.4533	-0.0839	-0.3106	-0.0943	-0.3555	-0.9065		-0.1920	0.8521	0.1287	0.0100
55	-0.0222	-0.4983	-0.0862	-0.3196	-0.1011	-0.3728	-0.9187		-0.1608	0.8562	0.1275	0.0096
56	-0.0261	-0.5393	-0.1108	-0.3254	-0.1046	-0.3870	-0.9216			0.8564	0.1254	0.0079
57	-0.0259	-0.5387	-0.1451	-0.3423	-0.1104	-0.4013	-0.9290			0.8427	0.1234	0.0055
58	-0.0194	-0.4993	-0.1560	-0.3583	-0.1172	-0.4099	-0.9359			0.8283	0.1225	0.0029

Birth Cohort (By first year of cohort)								Part-Time Category Threshold					
1910	1920	1930	1940	1950	1960	1970	1980	1	2	3	4	5	6
						0.1541	0.1560	-0.6828	1.2734	2.4326	3.4310	4.8273	5.7666
						0.0966	0.0789	2.2538	3.8797	4.8590	5.7096	6.9741	7.9056
						0.0726	-0.0368	1.2385	2.8618	3.8257	4.6195	5.8152	6.7268
						0.0381	**-0.1410**	-0.2659	1.4049	2.3865	3.1971	4.4164	5.3771
						0.0084	**-0.1672**	-0.8368	0.8020	1.7485	2.5370	3.7054	4.6527
					0.1192	**0.2002**		-1.2462	0.3812	1.3209	2.1120	3.2745	4.2285
					0.0981	**0.1419**		-1.7247	-0.1391	0.7716	1.5435	2.6642	3.5989
					0.0807	0.0855		-2.0647	-0.5275	0.3592	1.1195	2.2090	3.1277
					0.0638	0.0299		-2.2864	-0.8144	0.0508	0.8019	1.8681	2.7729
					0.0709	0.0381		-1.9165	-0.4936	0.3663	1.1213	2.1863	3.0918
					0.0631	0.0087		-2.4099	-1.0323	-0.1848	0.5643	1.6198	2.5185
					0.0428	-0.0298		-2.7035	-1.3570	-0.5246	0.2209	1.2728	2.1674
					0.0224	-0.0603		-2.7908	-1.4688	-0.6494	0.0912	1.1417	2.0311
					-0.0010	-0.0886		-2.7954	-1.4915	-0.6828	0.0541	1.1100	1.9913
					-0.0255	**-0.1209**		-2.7691	-1.4813	-0.6822	0.0517	1.1143	1.9849
				0.1361	**0.1521**			-2.3871	-1.1126	-0.3207	0.4106	1.4807	2.3409
				0.1316	**0.1201**			-2.3472	-1.0921	-0.3037	0.4241	1.4981	2.3452
				0.1135	0.0638			-2.3318	-1.0947	-0.3121	0.4139	1.4891	2.3277
				0.0874	0.0066			-2.3381	-1.1125	-0.3339	0.3888	1.4628	2.2980
				0.0640	-0.0423			-2.3781	-1.1622	-0.3878	0.3294	1.4028	2.2380
				0.0452	-0.0684			-2.2942	-1.0883	-0.3210	0.3921	1.4646	2.2980
				0.0303	-0.0805			-2.2597	-1.0572	-0.2954	0.4120	1.4846	2.3167
				0.0276	-0.0679			-2.1785	-0.9771	-0.2188	0.4825	1.5568	2.3860
				0.0287	-0.0554			-1.9999	-0.8029	-0.0475	0.6517	1.7254	2.5507
				0.0178	-0.0586			-1.8191	-0.6269	0.1247	0.8243	1.8991	2.7203
			0.0898	**0.1404**				-1.4476	-0.2612	0.4902	1.1888	2.2633	3.0840
			0.1004	**0.1302**				-1.3958	-0.2118	0.5373	1.2353	2.3096	3.1340
			0.1066	0.1076				-1.4948	-0.3132	0.4342	1.1298	2.2038	3.0324
			0.1041	0.0722				-1.6949	-0.5169	0.2286	0.9187	1.9931	2.8237
			0.0977	0.0459				-1.8323	-0.6561	0.0910	0.7750	1.8461	2.6757
			0.1084	0.0541				-1.9370	-0.7584	-0.0109	0.6687	1.7375	2.5649
			0.1137	0.0687				-2.0377	-0.8633	-0.1164	0.5581	1.6250	2.4452
			0.1111	0.0847				-2.0888	-0.9231	-0.1760	0.4959	1.5596	2.3725
			0.0935	0.0803				-2.0965	-0.9402	-0.1962	0.4752	1.5377	2.3458
			0.0809	0.0801				-2.1124	-0.9686	-0.2294	0.4409	1.5023	2.3077
		0.0403	0.1005					-2.0157	-0.8870	-0.1544	0.5144	1.5767	2.3794
		0.0394	0.0678					-2.1835	-1.0672	-0.3361	0.3332	1.3959	2.1974
		0.0355	0.0453					-2.4784	-1.3734	-0.6473	0.0218	1.0882	1.8876
		0.0245	0.0242					-2.8051	-1.7080	-0.9809	-0.3127	0.7560	1.5526
		0.0212	0.0161					-3.1574	-2.0689	-1.3394	-0.6723	0.4017	1.1991
		0.0218	0.0325					-3.4157	-2.3339	-1.5972	-0.9335	0.1397	0.9357
		0.0326	0.0661					-3.4602	-2.3903	-1.6524	-0.9880	0.0844	0.8811
		0.0521	0.1079					-3.1302	-2.0704	-1.3288	-0.6612	0.4113	1.2113

Continued

Table C-4.

Continued

Age Group	Age Coefficient	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School	Number of Children Under Age 6	Unemployment Rate	Earnings (*1,000)	Trend
			Never Married	Married	High School Graduate	Some College	College Graduate					
59	-0.0113	**-0.4869**	**-0.1737**	**-0.3715**	**-0.1299**	**-0.4199**	**-0.9576**			**0.8235**	**0.1213**	0.0007
60	-0.0034	**-0.4881**	**-0.1911**	**-0.3723**	**-0.1324**	**-0.4293**	**-0.9812**			**0.8219**	**0.1215**	-0.0006
61	c	**-0.4984**	**-0.1756**	**-0.3675**	**-0.1453**	**-0.4454**	**-1.0241**			**0.8363**	**0.1247**	0.0049
62	c	**-0.4941**	**-0.1538**	**-0.3491**	**-0.1610**	**-0.4673**	**-1.0732**			**0.8575**	**0.1293**	**0.0070**
63	c	**-0.4956**	**-0.1204**	**-0.3211**	**-0.1751**	**-0.4819**	**-1.1162**			**0.8903**	**0.1345**	**0.0091**
64	c	**-0.4816**	-0.0919	**-0.2818**	**-0.1857**	**-0.5004**	**-1.1418**			**0.9192**	**0.1410**	**0.0103**
65	c	**-0.4593**	-0.0496	**-0.2528**	**-0.2055**	**-0.5189**	**-1.1576**			**0.9465**	**0.1479**	**0.0120**
66	c	**-0.4259**	-0.0260	**-0.2333**	**-0.2042**	**-0.5193**	**-1.1399**			**0.9452**	**0.1528**	**0.0132**
67	**-0.0305**	**-0.3471**	0.0042	**-0.2426**	**-0.1944**	**-0.5066**	**-1.0967**			**0.9202**	**0.1565**	**0.0214**
68	**-0.0242**	**-0.3117**	0.0225	**-0.2429**	**-0.1846**	**-0.5062**	**-1.0551**			**0.8936**	**0.1606**	**0.0198**
69	**-0.0195**	**-0.3050**	0.0679	**-0.2552**	**-0.1659**	**-0.4970**	**-1.0267**			**0.8671**	**0.1633**	**0.0175**
70	**-0.0217**	**-0.4480**	**0.2608**	**-0.2654**	**-0.0926**	**-0.3609**	**-1.0000**			**0.8915**	**0.1375**	0.0082

Source: Congressional Budget Office.

Note: Coefficient values shown in bold indicate statistical significance at the 5 percent level. Statistical significance of the threshold values is not evaluated.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

c. Terms do not appear for ages 61 through 66 in order to isolate the effects of eligibility for Social Security retirement benefits at those ages.

Birth Cohort (By first year of cohort)								Part-Time Category Threshold					
1910	1920	1930	1940	1950	1960	1970	1980	1	2	3	4	5	6
		0.0668	0.1362					-2.7083	-1.6561	-0.9137	-0.2403	0.8378	1.6439
		0.0699	0.1443					-2.2640	-1.2165	-0.4741	0.2104	1.2933	2.0998
	-0.0578	-0.0262						-2.0535	-1.0094	-0.2686	0.4348	1.5309	2.3475
	-0.0566	-0.0497						-2.0208	-0.9698	-0.2245	0.4956	1.6060	2.4303
	-0.0462	-0.0649						-1.9708	-0.9068	-0.1547	0.5804	1.7042	2.5363
	-0.0291	-0.0567						-1.8900	-0.8115	-0.0544	0.6951	1.8295	2.6632
	-0.0102	-0.0499						-1.8064	-0.7088	0.0561	0.8147	1.9657	2.8081
	0.0009	-0.0484						-1.7195	-0.5989	0.1722	0.9337	2.1016	2.9391
	-0.0806	**-0.2146**						-3.6045	-2.4685	-1.6933	-0.9310	0.2592	1.0943
	-0.0619	-0.1835						-3.1349	-1.9882	-1.2133	-0.4526	0.7609	1.5897
	-0.0436	-0.1407						-2.8142	-1.6656	-0.8870	-0.1301	1.1031	1.9351
-0.0359	-0.0499							-3.2266	-2.1282	-1.3581	-0.6570	0.5371	1.3232

Table C-5.

Historical Unemployment Logit Coefficients for Men

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School
			Never Married	Married	High School Graduate	Some College	College Graduate	
16	-0.5124	0.1787	-0.5408	-0.3858				-0.6819
17	-3.2765	0.1011	-0.5271	-0.2000				-0.5999
18	-1.8493	0.0319	-0.5907	-0.3324				-0.8097
19	-0.7219	-0.0558	-0.5213	-0.3573				-0.9650
20	-0.4472	-0.1334	-0.4631	-0.3612				-1.0065
21	-0.2707	-0.2374	-0.4478	-0.3568				-1.0039
22	-0.1172	-0.3418	-0.4184	-0.3486				-0.9986
23	0.0466	-0.4455	-0.3916	-0.3430				-0.9962
24	0.1123	-0.5231	-0.3694	-0.3407				-0.9490
25	-0.3399	-0.4922	-0.2356	-0.2998	-0.1034	-0.5969	-0.6348	
26	-0.0972	-0.4396	-0.2326	-0.3083	-0.0679	-0.4507	-0.5856	
27	0.0036	-0.3786	-0.2304	-0.3216	-0.0423	-0.3512	-0.5451	
28	-0.0128	-0.3301	-0.2293	-0.3326	-0.0279	-0.2857	-0.5142	
29	-0.0145	-0.2783	-0.2252	-0.3351	-0.0233	-0.2454	-0.4921	
30	-0.0622	-0.2862	-0.2135	-0.3358	-0.0285	-0.2227	-0.4740	
31	-0.3020	-0.3144	-0.1996	-0.3223	-0.0411	-0.2212	-0.4609	
32	-0.3003	-0.3347	-0.1839	-0.2992	-0.0550	-0.2199	-0.4514	
33	-0.2787	-0.3555	-0.1734	-0.2806	-0.0597	-0.2137	-0.4304	
34	-0.2974	-0.3911	-0.1760	-0.2753	-0.0625	-0.2043	-0.4063	
35	-0.2482	-0.3538	-0.1893	-0.2741	-0.0636	-0.1927	-0.3801	
36	-0.2372	-0.3183	-0.2052	-0.2779	-0.0611	-0.1740	-0.3565	
37	-0.2285	-0.2817	-0.2234	-0.2914	-0.0551	-0.1580	-0.3258	
38	-0.1641	-0.2267	-0.2345	-0.3004	-0.0558	-0.1537	-0.3115	
39	-0.0661	-0.1829	-0.2276	-0.2984	-0.0579	-0.1508	-0.3011	
40	0.0848	-0.2035	-0.2206	-0.2921	-0.0663	-0.1473	-0.2894	
41	-0.2837	-0.1997	-0.2070	-0.2879	-0.0841	-0.1468	-0.2801	
42	-0.0637	-0.2188	-0.2033	-0.2844	-0.1053	-0.1440	-0.2778	
43	0.0584	-0.2702	-0.2114	-0.2900	-0.1242	-0.1357	-0.2722	
44	0.0670	-0.3331	-0.2219	-0.2988	-0.1441	-0.1274	-0.2675	
45	-0.1004	-0.3426	-0.2277	-0.3063	-0.1591	-0.1244	-0.2695	
46	-0.2286	-0.3967	-0.2407	-0.3128	-0.1683	-0.1235	-0.2665	
47	-0.3400	-0.4190	-0.2378	-0.3086	-0.1729	-0.1268	-0.2594	
48	-0.2949	-0.4204	-0.2226	-0.2880	-0.1708	-0.1271	-0.2445	
49	-0.1439	-0.4073	-0.2237	-0.2671	-0.1651	-0.1320	-0.2303	
50	0.1261	-0.4331	-0.2271	-0.2552	-0.1531	-0.1351	-0.2097	
51	-0.0511	-0.4268	-0.2251	-0.2452	-0.1424	-0.1321	-0.1912	
52	0.2350	-0.4717	-0.2352	-0.2479	-0.1344	-0.1331	-0.1879	
53	0.4159	-0.4924	-0.2386	-0.2613	-0.1425	-0.1422	-0.2004	
54	0.6008	-0.4935	-0.2384	-0.2785	-0.1592	-0.1527	-0.2197	
55	0.5839	-0.4630	-0.2472	-0.2955	-0.1838	-0.1628	-0.2541	
56	0.3850	-0.4435	-0.2640	-0.3117	-0.2068	-0.1817	-0.2995	
57	0.2058	-0.3806	-0.2628	-0.3109	-0.2321	-0.1942	-0.3320	
58	0.3427	-0.3300	-0.2729	-0.3077	-0.2447	-0.1997	-0.3522	

Unemployment Rate	Earnings (*1,000)	Trend	Birth Cohort (By first year of cohort)							
			1910	1920	1930	1940	1950	1960	1970	1980
0.0341	-0.1666	-0.0135							-0.1658	-0.2078
0.0528	**-0.4613**	**-0.0089**							**-0.1540**	**-0.4248**
0.0502	**-0.6386**	**-0.0159**							-0.0109	**-0.2149**
0.0535	**-0.7254**	**-0.0224**							**0.0780**	-0.0650
0.0582	**-0.7666**	**-0.0263**							**0.0905**	0.0030
0.0574	**-0.7882**	**-0.0320**						0.0254	**0.1407**	
0.0644	**-0.8106**	**-0.0295**						-0.0313	0.0348	
0.0730	**-0.8302**	**-0.0260**						**-0.0841**	**-0.0897**	
0.0799	**-0.8424**	**-0.0233**						**-0.1218**	**-0.1974**	
0.0888	**-0.8202**	**-0.0267**						**-0.1488**	**-0.2397**	
0.0935	**-0.8246**	**-0.0265**						**-0.1371**	**-0.2508**	
0.1040	**-0.8255**	**-0.0280**						**-0.0938**	**-0.1929**	
0.1170	**-0.8194**	**-0.0300**						-0.0442	**-0.1062**	
0.1276	**-0.8070**	**-0.0295**						-0.0304	-0.0650	
0.1340	**-0.7906**	**-0.0263**						**-0.0591**	**-0.0835**	
0.1298	**-0.7732**	**-0.0288**					**0.1152**	0.0513		
0.1320	**-0.7561**	**-0.0233**					**0.0934**	-0.0386		
0.1356	**-0.7445**	**-0.0178**					**0.0731**	**-0.1261**		
0.1358	**-0.7355**	**-0.0144**					**0.0563**	**-0.1900**		
0.1337	**-0.7245**	**-0.0128**					0.0461	**-0.2264**		
0.1329	**-0.7138**	**-0.0124**					0.0337	**-0.2475**		
0.1327	**-0.7018**	**-0.0132**					0.0302	**-0.2429**		
0.1335	**-0.6856**	**-0.0139**					0.0176	**-0.2367**		
0.1345	**-0.6691**	**-0.0130**					-0.0109	**-0.2456**		
0.1343	**-0.6566**	**-0.0106**					-0.0629	**-0.2819**		
0.1201	**-0.6441**	**-0.0265**				**0.2064**	**0.2096**			
0.1150	**-0.6315**	**-0.0234**				**0.2055**	**0.1446**			
0.1128	**-0.6200**	**-0.0204**				**0.1967**	0.0841			
0.1135	**-0.6083**	**-0.0185**				**0.1961**	0.0486			
0.1170	**-0.5963**	**-0.0171**				**0.1864**	0.0294			
0.1190	**-0.5859**	**-0.0150**				**0.1676**	0.0012			
0.1205	**-0.5807**	**-0.0122**				**0.1326**	-0.0388			
0.1223	**-0.5772**	**-0.0102**				**0.1029**	-0.0634			
0.1234	**-0.5760**	**-0.0073**				0.0532	-0.1095			
0.1256	**-0.5748**	**-0.0055**				0.0147	**-0.1433**			
0.1193	**-0.5722**	**-0.0175**			**0.1531**	**0.2142**				
0.1209	**-0.5668**	**-0.0149**			**0.1496**	**0.1523**				
0.1246	**-0.5592**	**-0.0100**			**0.1383**	0.0588				
0.1304	**-0.5499**	-0.0044			**0.1105**	-0.0423				
0.1352	**-0.5374**	0.0005			**0.0854**	-0.1243				
0.1409	**-0.5280**	0.0035			0.0737	**-0.1620**				
0.1475	**-0.5146**	0.0034			0.0817	-0.1365				
0.1522	**-0.5039**	0.0021			0.0856	-0.1096				

Continued

Table C-5.

Continued

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School
			Never Married	Married	High School Graduate	Some College	College Graduate	
59	**0.9980**	**-0.3565**	**-0.2679**	**-0.2995**	**-0.2452**	**-0.2002**	**-0.3634**	
60	**1.9146**	**-0.3401**	**-0.2442**	**-0.2868**	**-0.2450**	**-0.2081**	**-0.3561**	
61	**-1.8152**	**-0.4513**	**-0.1965**	**-0.2676**	**-0.2449**	**-0.2028**	**-0.3281**	
62	**-1.7470**	**-0.4371**	**-0.1774**	**-0.2689**	**-0.2449**	**-0.2071**	**-0.3045**	
63	**-1.7370**	**-0.4181**	-0.1547	**-0.2806**	**-0.2518**	**-0.2213**	**-0.2897**	
64	**-1.8328**	**-0.3689**	-0.1366	**-0.2971**	**-0.2612**	**-0.2389**	**-0.2775**	
65	**-1.9748**	**-0.2936**	-0.1038	**-0.3077**	**-0.2840**	**-0.2507**	**-0.2783**	
66	**-2.0802**	**-0.2081**	-0.1010	**-0.3480**	**-0.3076**	**-0.2804**	**-0.3098**	
67	**6.5030**	0.0152	-0.1065	**-0.4000**	**-0.3041**	**-0.2823**	**-0.2791**	
68	**4.9293**	0.0301	-0.1436	**-0.4302**	**-0.2832**	**-0.2701**	**-0.2644**	
69	**2.3259**	0.0247	-0.2155	**-0.4751**	**-0.2711**	**-0.2492**	**-0.2534**	
70	-0.9556	**-0.7001**	-0.2887	**-0.4913**	-0.0303	0.0808	-0.1957	

Source: Congressional Budget Office.

Note: Coefficient values shown in bold indicate statistical significance at the 5 percent level.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

Unemployment Rate	Earnings (*1,000)	Trend	Birth Cohort (By first year of cohort) 1910	1920	1930	1940	1950	1960	1970	1980
0.1529	**-0.4909**	0.0006			0.0827	-0.1033				
0.1516	**-0.4769**	-0.0018			0.0865	-0.0773				
0.1343	**-0.4550**	**-0.0261**		0.2475	0.5362					
0.1171	**-0.4367**	**-0.0317**		0.2748	0.5821					
0.1053	**-0.4098**	**-0.0359**		0.2924	0.6150					
0.1026	**-0.3795**	**-0.0364**		0.2809	0.6052					
0.0983	**-0.3452**	**-0.0361**		0.2864	0.5994					
0.0911	**-0.3151**	**-0.0377**		0.3364	0.6485					
0.0708	**-0.2956**	-0.0121		0.0660	0.0677					
0.0699	**-0.2831**	-0.0161		0.1691	0.2458					
0.0659	**-0.2784**	-0.0220		**0.3119**	**0.4507**					
0.1287	**-0.3239**	0.0080	**-0.3019**	-0.1516						

Table C-6.

Historical Unemployment Logit Coefficients for Women

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School
			Never Married	Married	High School Graduate	Some College	College Graduate	
16	-0.5744	0.0397	0.2364	0.4052				-0.6937
17	-2.8524	0.0696	-0.5093	-0.2517				-0.4547
18	-1.2497	0.0344	-0.5125	-0.3504				-0.6530
19	-1.1164	-0.0046	-0.4748	-0.3922				-0.7601
20	-1.4851	-0.0367	-0.4146	-0.4055				-0.7710
21	-1.9782	-0.0658	-0.3819	-0.4132				-0.7664
22	-2.4001	-0.0831	-0.3350	-0.4185				-0.7640
23	-2.3654	-0.1118	-0.2960	-0.4283				-0.7793
24	-2.0286	-0.1192	-0.2614	-0.4365				-0.7436
25	-2.5743	-0.0951	-0.2526	-0.4426	-0.2009	-0.4203	-0.0676	
26	-2.0627	-0.1105	-0.2286	-0.4618	-0.2072	-0.3352	-0.0625	
27	-1.7486	-0.1398	-0.2045	-0.4765	-0.2042	-0.2750	-0.0530	
28	-1.6406	-0.1740	-0.1856	-0.4934	-0.1953	-0.2375	-0.0437	
29	-1.5497	-0.1933	-0.1733	-0.5132	-0.1934	-0.2145	-0.0425	
30	-1.5676	-0.1942	-0.1617	-0.5282	-0.1922	-0.2016	-0.0466	
31	-2.2292	-0.1860	-0.1460	-0.5412	-0.1924	-0.1905	-0.0503	
32	-2.1872	-0.1843	-0.1329	-0.5582	-0.1957	-0.1842	-0.0551	
33	-2.1355	-0.1456	-0.1160	-0.5713	-0.2021	-0.1824	-0.0646	
34	-2.0291	-0.1050	-0.1021	-0.5857	-0.2067	-0.1889	-0.0822	
35	-1.8033	-0.0781	-0.0891	-0.5998	-0.2160	-0.1988	-0.1098	
36	-1.6244	-0.0437	-0.0821	-0.6154	-0.2210	-0.2062	-0.1282	
37	-1.4958	-0.0013	-0.0815	-0.6260	-0.2247	-0.2170	-0.1464	
38	-1.3666	0.0167	-0.0811	-0.6331	-0.2273	-0.2273	-0.1589	
39	-1.5013	0.0205	-0.0831	-0.6295	-0.2326	-0.2358	-0.1694	
40	-1.6290	0.0196	-0.0888	-0.6233	-0.2337	-0.2365	-0.1630	
41	-2.2630	-0.0044	-0.0933	-0.6104	-0.2406	-0.2413	-0.1588	
42	-2.2005	-0.0433	-0.0961	-0.5981	-0.2482	-0.2411	-0.1479	
43	-1.9504	-0.0760	-0.1043	-0.5862	-0.2560	-0.2430	-0.1420	
44	-1.6513	-0.0997	-0.1033	-0.5814	-0.2544	-0.2342	-0.1123	
45	-1.3123	-0.1112	-0.0999	-0.5785	-0.2543	-0.2305	-0.0944	
46	-0.9224	-0.1119	-0.0939	-0.5746	-0.2488	-0.2153	-0.0808	
47	-0.6196	-0.1013	-0.0915	-0.5718	-0.2444	-0.2048	-0.0739	
48	-0.4184	-0.1123	-0.0875	-0.5691	-0.2439	-0.1939	-0.0624	
49	-0.2496	-0.1421	-0.0885	-0.5678	-0.2540	-0.1919	-0.0710	
50	-0.1002	-0.1954	-0.0869	-0.5641	-0.2713	-0.1978	-0.0796	
51	-0.3063	-0.2348	-0.0841	-0.5607	-0.2967	-0.2174	-0.0884	
52	-0.0434	-0.2760	-0.0752	-0.5532	-0.3169	-0.2337	-0.0971	
53	0.3137	-0.2815	-0.0765	-0.5513	-0.3332	-0.2435	-0.1056	
54	0.8432	-0.2472	-0.0813	-0.5350	-0.3504	-0.2564	-0.1218	
55	1.2630	-0.1971	-0.0897	-0.5233	-0.3533	-0.2558	-0.1312	
56	1.7236	-0.1849	-0.1113	-0.5205	-0.3461	-0.2431	-0.1471	
57	2.1024	-0.1943	-0.1433	-0.5197	-0.3438	-0.2426	-0.1670	
58	2.4058	-0.2260	-0.1699	-0.5121	-0.3372	-0.2486	-0.1943	

Number of Children Under Age 6	Unemployment Rate	Earnings (*1,000)	Trend	Birth Cohort (By first year of cohort)							
				1910	1920	1930	1940	1950	1960	1970	1980
0.2001	0.0325	**-0.6237**	-0.0116							-0.1316	-0.3254
0.0934	**0.0359**	**-0.6004**	**-0.0296**							-0.0004	0.0188
-0.0018	**0.0387**	**-0.8024**	**-0.0290**							0.0355	0.0600
-0.0396	**0.0347**	**-0.9094**	**-0.0266**							0.0407	0.0376
-0.0517	**0.0359**	**-0.9583**	**-0.0259**							0.0337	0.0310
-0.0593	**0.0368**	**-0.9775**	**-0.0260**						0.0084	0.0492	
-0.0729	**0.0436**	**-0.9941**	**-0.0230**						-0.0249	-0.0141	
-0.0909	**0.0512**	**-1.0080**	**-0.0196**						**-0.0573**	**-0.0838**	
-0.1119	**0.0559**	**-1.0121**	**-0.0165**						**-0.0861**	**-0.1555**	
-0.1241	**0.0620**	**-0.9874**	**-0.0163**						**-0.0995**	**-0.2092**	
-0.1540	**0.0611**	**-0.9906**	**-0.0137**						**-0.1064**	**-0.2559**	
-0.1805	**0.0617**	**-0.9853**	**-0.0118**						**-0.1088**	**-0.2767**	
-0.2007	**0.0668**	**-0.9678**	**-0.0106**						**-0.0953**	**-0.2625**	
-0.2145	**0.0739**	**-0.9407**	**-0.0101**						**-0.0803**	**-0.2381**	
-0.2194	**0.0820**	**-0.9137**	**-0.0089**						**-0.0746**	**-0.2325**	
-0.2169	**0.0763**	**-0.8925**	**-0.0236**					**0.2008**	**0.2221**		
-0.2136	**0.0819**	**-0.8730**	**-0.0209**					**0.1602**	**0.1586**		
-0.2046	**0.0874**	**-0.8607**	**-0.0166**					**0.1107**	0.0627		
-0.1861	**0.0933**	**-0.8568**	**-0.0119**					**0.0616**	**-0.0307**		
-0.1685	**0.0934**	**-0.8487**	**-0.0076**					0.0157	**-0.1240**		
-0.1547	**0.0879**	**-0.8438**	-0.0041					-0.0280	**-0.2116**		
-0.1356	**0.0814**	**-0.8393**	-0.0021					-0.0516	**-0.2684**		
-0.1217	**0.0777**	**-0.8320**	-0.0017					-0.0557	**-0.2839**		
-0.1133	**0.0752**	**-0.8233**	-0.0023					-0.0461	**-0.2741**		
-0.1007	**0.0766**	**-0.8239**	-0.0043					-0.0231	**-0.2398**		
-0.0848	**0.0669**	**-0.8211**	**-0.0240**				**0.2034**	**0.3188**			
-0.0794	**0.0675**	**-0.8226**	**-0.0226**				**0.1796**	**0.2764**			
-0.0702	**0.0746**	**-0.8250**	**-0.0191**				**0.1384**	**0.2027**			
-0.0723	**0.0847**	**-0.8309**	**-0.0147**				**0.0997**	**0.1258**			
-0.0810	**0.0890**	**-0.8335**	**-0.0111**				0.0680	0.0680			
-0.0831	**0.0902**	**-0.8395**	**-0.0090**				0.0507	0.0370			
-0.0525	**0.0903**	**-0.8420**	**-0.0092**				0.0552	0.0496			
-0.0165	**0.0902**	**-0.8484**	**-0.0110**				0.0802	0.1010			
0.0348	**0.0852**	**-0.8508**	**-0.0131**				**0.1031**	**0.1457**			
0.0858	**0.0831**	**-0.8532**	**-0.0144**				**0.1214**	**0.1754**			
0.1462	**0.0800**	**-0.8553**	**-0.0126**			-0.0070	0.1133				
0.1610	**0.0782**	**-0.8590**	**-0.0136**			0.0074	**0.1429**				
0.1688	**0.0758**	**-0.8614**	**-0.0145**			0.0227	**0.1692**				
0.1569	**0.0796**	**-0.8644**	**-0.0123**			0.0003	0.1358				
0.1431	**0.0799**	**-0.8651**	**-0.0098**			-0.0282	0.0895				
	0.0787	**-0.8675**	-0.0063			-0.0711	0.0073				
	0.0793	**-0.8755**	-0.0031			**-0.1106**	-0.0770				
	0.0846	**-0.8747**	-0.0001			**-0.1462**	-0.1437				

Continued

Table C-6.

Continued

Age Group	Coefficient for Age + Constant	Social Security Benefit Receipt	Marital Status[a]		Education Level[b]			In School
			Never Married	Married	High School Graduate	Some College	College Graduate	
59	**3.3000**	**-0.2814**	**-0.1866**	-0.5214	**-0.3191**	**-0.2413**	**-0.2125**	
60	**4.0249**	**-0.2974**	**-0.1929**	-0.5284	**-0.3095**	**-0.2483**	**-0.2479**	
61	**-2.9748**	**-0.4446**	**-0.2008**	-0.5227	**-0.3016**	**-0.2728**	**-0.2673**	
62	**-2.8245**	**-0.4228**	**-0.1792**	-0.5024	**-0.2958**	**-0.2953**	**-0.2858**	
63	**-2.7286**	**-0.3924**	-0.1171	-0.4690	**-0.2904**	**-0.3326**	**-0.3022**	
64	**-3.1729**	**-0.3376**	-0.0640	-0.4248	**-0.2865**	**-0.3857**	**-0.3180**	
65	**-3.4676**	**-0.2568**	-0.0098	-0.3720	**-0.2746**	**-0.4089**	**-0.3142**	
66	**-3.3812**	**-0.1903**	0.0369	-0.3410	**-0.2531**	**-0.4011**	**-0.3180**	
67	**-3.3176**	-0.0920	0.0778	-0.3523	**-0.2161**	**-0.3912**	**-0.3089**	
68	**-0.6947**	-0.0939	0.0343	-0.3860	**-0.1884**	**-0.3295**	**-0.3196**	
69	**-0.1994**	-0.1035	0.0220	-0.4170	**-0.1730**	**-0.2651**	**-0.3509**	
70	**0.6105**	**-0.4308**	-0.0981	-0.5140	-0.1668	**-0.4180**	-0.3136	

Source: Congressional Budget Office.

Note: Coefficient values shown in bold indicate statistical significance at the 5 percent level.

a. The omitted category includes divorced and widowed individuals.

b. The omitted category includes individuals with less than a high school education.

Number of Children Under Age 6	Unemployment Rate	Earnings (*1,000)	Trend	Birth Cohort (By first year of cohort)							
				1910	1920	1930	1940	1950	1960	1970	1980
	0.0890	**-0.8694**	-0.0004			**-0.1428**	-0.1508				
	0.0973	**-0.8709**	-0.0008			**-0.1314**	-0.1492				
	0.0937	**-0.8586**	**-0.0168**		**0.1745**	**0.2375**					
	0.0840	**-0.8166**	**-0.0190**		**0.1770**	**0.2513**					
	0.0692	**-0.7687**	**-0.0223**		**0.1921**	**0.2828**					
	0.0617	**-0.7142**	**-0.0222**		**0.2035**	**0.2840**					
	0.0473	**-0.6248**	**-0.0211**		**0.1967**	0.2523					
	0.0325	**-0.5538**	**-0.0199**		**0.2053**	0.2176					
	0.0159	**-0.5356**	0.0008		-0.0072	-0.2645					
	0.0156	**-0.5279**	0.0002		0.0484	-0.2257					
	0.0162	**-0.5179**	-0.0015		0.1250	-0.1779					
	0.0532	**-0.3598**	-0.0059	0.0120	0.2668						

Appendix D: Permanent and Transitory Earnings Shocks

The approach used to model the idiosyncratic component of earnings in the Congressional Budget Office's long-term microsimulation model (CBOLT) was actually first proven useful in another context: generating a synthetic microsample for studying consumption and wealth accumulation behavior.[1] Decomposing earnings shocks into distinct permanent and transitory components is particularly useful for researchers studying consumption behavior, because economic theory predicts that spending will respond differently to the two types of shocks. Indeed, one of the reasons for choosing the permanent or transitory shock approach is the ultimate goal of projecting micro-level saving and wealth along with the other projections in the microsimulation. For this paper, however, the key insight is that the result of generating realistic heterogeneity in a microsample in CBOLT is the same as in the consumption literature, and thus the technique lends itself to the demands of CBOLT.

Every person (subscripted $i = 1,\ldots,n$) in an actual or simulated data set has an actual log earnings observation at time t, denoted here using y_{it}. Each person also has a predicted value for log earnings, which depends on observable characteristics (age, sex, education, and birth cohort) collectively denoted as X_{it}. That predicted value is denoted using the generic functional reference $f(X_{it})$; in the case of CBOLT, $f(X_{it})$ is the linear regression for log earnings. The gap between the actual and predicted values (denoted e_{it}) is derived from the identity $e_{it} = y_{it} - f(X_{it})$. As described in the text, the component of interest here is the e_{it}; the observable component is taken as given from the earnings equations.

The CBOLT approach to simulating the idiosyncratic error terms is to separate the overall individual error into a permanent component (e^p_{it}) and a transitory component (e^t_{it}), such that the two pieces sum to the total error for every individual in every year:

$$e_{it} = e^p_{it} + e^t_{it}.$$

The transitory component is random in each year, drawn from a log-normal distribution with variance s^2_t. The permanent component moves slowly over time, according to $e^p_{it} = e^p_{it-1} + n_{it}$. The permanent shocks (the n_{it}) are drawn from a log-normal distri-

1. See Christopher D. Carroll, "The Buffer-Stock Theory of Saving: Some Macroeconomic Evidence," *Brookings Papers on Economic Activity*, vol. 2 (1992), pp. 61–135.

bution with variance s^2_p. Any given person will start his or her earnings career with some initial value for the permanent differential (e^p_{i0}), which then evolves over time through the sequence of permanent shocks.

The permanent and transitory decompositions of the error terms lead to useful adding-up conditions that make it possible to estimate the variances of the permanent and transitory shocks using longitudinal data. First, note that the total variance for any group of people in any year obeys the condition VAR(e_{it}) = VAR(e^p_{it}) + VAR(e^t_{it}). Second, note that the variance of the permanent differentials for any group will increase over time, by exactly s^2_p per year because VAR(e^p_{it}) = VAR(e^p_{it-1}) + VAR(n_{it}). Thus, if a given cohort starts at age 0 with an initial distribution of permanent differentials (VAR(e^p_{i0})), then by the time the cohort reaches age a, the variance of the permanent differentials will be VAR(e^p_{i0}) + $a \times s^2_p$.

Those relationships make it possible to estimate underlying variances using longitudinal data. The idea is to measure the earnings equation error terms for each person one year apart, two years apart, three years apart, and so forth, and to observe how the variance of the error terms in the sample grows as the time gap increases. For example, the variance for the errors might be 6 percent at a one-year gap, 7 percent at a two-year gap, 8 percent at a three-year gap, and 9 percent at a four-year gap. The growth in the variance of the differentials represents the permanent component; in the example, this would be 1 percent. The same analysis (through the adding-up condition) also produces an estimate of the transitory variance; in the example, that would be 3 percent. Indeed, these values (s^2_p = 1 percent, s^2_t = 3 percent) are roughly consistent with direct empirical estimates for the variances of the shocks.[2]

The actual values for the transitory variances in CBOLT are set higher than these earlier estimates in order to be consistent with patterns of earnings in the overall U.S. economy. (The earlier research focused on a subset of families whose earnings are, through sample selection criteria, much more stable.) In CBOLT, the variance of the permanent shocks for men is set to 1 percent, and the variance of the transitory shocks for men is set to 20.25 percent. The variance of the permanent shocks for women is set to 0.36 percent, and the variance of the transitory shocks for women is set to 16 percent.

2. Ibid.

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