3-1-2009

Taxes, Wages, and the Labor Supply of Older Americans

Lucie Schmidt
Williams College, lschmidt@smith.edu

Purvi Sevak
Hunter College

University of Michigan Retirement Research Center

Working Paper

WP 2006-139

Taxes, Wages, and the Labor Supply of Older Americans

Lucie Schmidt and Purvi Sevak

M R R C

Project #: UM06-08

"Taxes, Wages, and the Labor Supply of Older Americans"

Lucie Schmidt
Williams College

Purvi Sevak
Hunter College

November 2006

Michigan Retirement Research Center
University of Michigan
P.O. Box 1248
Ann Arbor, MI 48104
http://www.mrrc.isr.umich.edu/
(734) 615-0422

Acknowledgements

This work was supported by a grant from the Social Security Administration through the Michigan Retirement Research Center (Grant # 10-P-98358-5). The findings and conclusions expressed are solely those of the author and do not represent the views of the Social Security Administration, any agency of the Federal government, or the Michigan Retirement Research Center.

Taxes, Wages, and Labor Supply of Older Americans

Lucie Schmidt and Purvi Sevak

Abstract

The aging of the U.S. population, combined with an increasing probability that any given older individual will work, means that the importance of older workers to the labor force is rising. One possible solution to the solvency problems facing the Social Security System is increasing the labor supply of older workers. Understanding how policy levers can affect the labor supply of the elderly therefore has become increasingly important. In this paper we use data from the Health and Retirement Study (HRS), linked to state identifiers, to estimate the responsiveness of the labor supply of older workers to features of the tax code, on both the extensive margin of participation and the intensive margin of hours of work. This unique data set allows us to avoid some of the traditional pitfalls associated with the labor supply literature. We find evidence that the labor supply of older workers is responsive to the tax structure. Our results suggest that government policies could play a role in increasing the labor supply of individuals over the age of 65 by changing the returns to work through the tax code.

I. Introduction

Even before the downturn in the stock market began in 2000, the decades-long trend in earlier retirement had started to reverse, as the oldest baby boomers were delaying retirement. Evidence for this is presented in Figure 1, which shows the labor force participation rate for men aged 66-85.[1] The subsequent reduction in the value of many seniors' retirement portfolios may have heightened this trend.

The aging of the U.S. population, combined with an increasing probability that any given older individual will work, means that the importance of older workers to the labor force is rising. This is particularly true with respect to the financing of Social Security benefits. The Board of Trustees of the Social Security Administration (1999) projects that the ratio of workers to beneficiaries will decline from 3.4 in 2000 to 1.8 in 2075. One potential solution to this impending problem would be an increase in labor force participation of those over the age of 65. Understanding how policy levers can affect the labor supply of the elderly therefore has become increasingly important.

In this paper we use data from the Health and Retirement Study (HRS), linked to state identifiers, to estimate the responsiveness of the labor supply of older workers to features of the tax code, on both the extensive margin of participation and the intensive margin of hours of work. In doing this, we also look at the responsiveness of workers to the wage and unearned income. Other work has attempted to examine the effects of the tax structure on the labor force decisions of older workers. However, it generally suffers from some of the traditional problems associated with the labor supply literature. Specifically, variation in federal tax rates comes

[1] These trends have also been reported in the popular press. See, for instance, "Baby Boomers Delay Retirement," *Washington Post*, April 6, 2000; "Reversing Decades-Long Trend, Americans Retiring Later in Life," *New York Times*, February 26, 2001; and Seniors Work Longer, Take Part-Time Jobs as Portfolios Plunge," *Money Magazine*, June 11, 2001.

entirely from individual-level potential earnings, which are a function of past labor force decisions and are likely to be correlated with tastes for work.

Our data allow us to use individual-level information from earnings histories as well as state-level variation in the tax treatment of earned income, Social Security income, and pension income to identify variation in the returns to work faced by older workers. We find evidence that the labor supply of older workers is responsive to the tax structure. We find that 10 percent increase in the after-tax return to work leads to increased participation of 7.9 percent among men and 4.9 percent among women. It is associated with 5.3 percent greater hours worked among make workers and 3.6 percent greater hours worked among female workers.

Our results have important policy implications. Understanding how wages and various features of both the federal tax code and state tax structures may either encourage or discourage older individuals to work is critical for understanding the effects of potential changes in the Social Security system on labor supply, as well as to understanding the role that the increased labor supply of older workers might play in the long-run viability of the Social Security system. Our results suggest that government policies could play a role in increasing the labor supply of individuals over the age of 65 by changing the returns to work through the tax code. In addition, our findings are encouraging for firms who may be looking for tools to attract or retain older workers because of their skills or experience.

II. Background

In standard life-cycle models of labor supply, retirement is a one-time decision. However, as noted by Maestas (2004), 24% of all retirees exhibit "unretirement," defined as a reversal in labor force participation. Unretirees return to the labor force after partially or fully

retiring. It is unclear why individuals would retire and then return to the labor force. If there are significant costs associated with retiring and then returning to the labor force, one would not expect to see so many cases of unretirement.

One possible explanation is that the elderly return to work as a result of poor financial planning. However, recent work casts doubt on this explanation. Haider and Loughran (2001) find that labor supply among the elderly is concentrated among the healthiest, wealthiest, and most educated older individuals, and that these individuals earn relatively low wages. They interpret these findings as indicating that work is more like leisure for these older workers, and that the return to working in the form of the wage does not have a large effect on the labor force decisions of older individuals.[2] Consistent with Haider and Loughran, Maestas (2004) finds that retirees who return to work have not suffered from poor financial planning, inadequate resources, or negative wealth shocks, and that they had higher pre-retirement earnings and education than retirees who remain out of the labor force.

Of the other economic factors potentially affecting labor supply decisions of the elderly, the Social Security earnings test has been studied most extensively. However, the many papers on the earnings test fail to reach a consensus on its effects.[3] Friedberg (2000) uses three changes in the earnings test between 1978 and 1990 that differentially affect particular age groups to examine the effects on labor supply. She estimates small but statistically significant income and wage elasticities of elderly labor supply among workers, but finds no evidence of effects on the decision to work. Gruber and Orszag (2000) use the same policy changes (and an additional change in 1996-1998) to analyze the effect of the earnings test on the decision to work and on

[2] However, their findings are based on the variation in the hours of those who are currently working and it is possible that the wage may be more important determining whether one works (i.e. the participation decision) than how many hours they work (the hours decision).

[3] See Haider and Loughran (2005) for a thorough review that attempts to reconcile differing results across the literature.

aggregate hours, and find no influence on labor supply decisions of men. Haider and Loughran (2005) find that when allowing for rigidities in the labor market, some changes in the earnings test have had substantial effects on the labor supply decisions of men. Specifically, they find evidence that the repeal of the earnings test in 2000 increased labor supply whereas elimination of the earnings test for 70 year olds in 1983 had no effect.

Despite the extensive literature on the effects of the Social Security earnings test on the labor supply of older workers, and an even more extensive literature on the effects of the income tax code on the labor supply of prime-age workers (see Blundell and MaCurdy (1999) and Pencavel (1986) for reviews of this literature), relatively little work examines the effects of the income tax code on elderly labor supply. One exception is work by Favreault et al (1999) that estimates the effects of the federal tax code (income taxes, the employee share of payroll taxes, and reduced Social Security benefits from the earnings test) on the labor supply of older workers. They examine both the extensive and intensive margins, using data from the Survey of Income and Program Participation (SIPP) linked to Social Security Summary Earnings Records and Master Beneficiary Records. They calculate an individual's "potential earnings," which is an approximation of the labor income the person could gain through employment, based on the past covered wages from the Social Security earnings histories. They find a large effect of federal tax rates on the participation decision. However, their variation comes entirely from individual-level potential earnings, which are a function of past labor force decisions and are likely to be correlated with tastes for work. They also do not model taxes at the state level, and therefore their approach cannot speak to whether two otherwise identical individuals with the same earnings history will respond to differences in net wage rates generated by the tax system.

In the United States, there is a great deal of cross-state variation in both marginal tax rates and the tax treatment of pension and Social Security income. Table 1 summarizes some features of state tax rules. The state marginal tax rate on labor market earnings varies from zero to almost ten percent across the 50 states.[4] Resulting differences in the after-tax wage may be especially important because for households with significant unearned income, such as many of the elderly, substitution effects are more likely to dominate income effects in labor supply decisions. In addition, interactions of unearned income with the graduated structure of our income tax code may further reduce the incentive to work for older workers. Retiree income, to the extent that it is taxable, often increases the marginal tax rate a potential worker faces on their earnings. Thus, the after-tax wage they earn is lower than it was before they started to receive retiree income.

Differential tax treatment of pension and Social Security income can therefore have large effects on the financial reward to working, particularly for individuals with substantial unearned income. Take for example, a single elderly man who receives $30,000 in pension income, $6,000 in Social Security income, and no other income. Given the usual federal and state exemptions and deductions, his total tax liability (combined federal and state) is $5,357 if he lives in Wisconsin, but it is $3,705 (about 30 percent lower) if he lives in Michigan. Furthermore, the marginal tax rate he would face (again, from combined federal and state taxes) if he began to work is 15 percent if he lives in Michigan and 22.3 percent if he lives in Wisconsin. Despite the fact that his gross income is the same in both states, his after-tax annuity income and potential wage are quite different. As a result the incentives to work are quite different depending on his state of residence.

[4] http://www.nber.org/~taxsim/state-rates/maxrate.html.

In this paper, we examine the importance of wages and taxes on the labor supply decision, using a dataset that allows us to do so more precisely than has been possible in the past. The HRS data, described in the next section, contains detailed work histories, which allow us to create measures of potential wages for both workers and non-workers. In addition, through restricted access data, we can observe the state of residence of all the respondents, allowing us to model the federal and state income taxes they face.

Data

We use data on individuals ages 65 to 84 from the 1998, 2000, and 2002 waves of the Health and Retirement Study (HRS). The HRS is a nationally representative panel dataset that began in 1992. The study interviewed individuals ages 51 to 61 in 1992 and has been re-interviewing them every two years since then. In 1998, when the original sample was ages 57 to 67, the HRS merged with the AHEAD survey, a survey of individuals who were ages 75 and older in 1998. New respondents who were ages 68-74 or 51-56 were also added, making the survey a representative sample of individuals who were ages 51 and older in 1998.

The HRS contains detailed data on many of the factors that would influence labor supply decisions. Studies of labor supply are typically limited by the fact that wages are unobservable for non-workers. Researchers must impute a wage using observable characteristics and a variety of controversial assumptions. However, HRS respondents are asked a variety of questions about their *prior* jobs, including what their earnings or wages were, and the occupation and industry of the job. Using these data, we can construct a potential wage for all individuals, regardless of their current employment status.[5]

[5] The HRS allows respondents to report their current and prior compensation as an hourly wage or daily, weekly, monthly or annual salary. Because they also report the usual number of hours and weeks worked at each of these

In addition to the wage, the HRS contains rich measures of financial well being, health, and family structure that should affect tastes for work. Because the HRS identifies respondents' state of residence, we are able to model features of state income taxes that could have strong effects on the incentive to work.[6]

Estimating Determinants of Labor Force Participation

The key economic factors influencing whether an individual works are the return to working and his or her level of unearned income. Personal characteristics such as health and marital status may also be important determinants of the labor supply decision. We estimate logits of labor force participation of the form:

$$L_{it} = f\left[\beta_o + \beta_1 \ln w_{it} + \beta_2 \ln\left(1-\tau_{ijt}\right) + \beta_3 \ln I_{it} + X_{it}\delta + \sum_j S_j + \beta_4 U_{jt} + v_{it}\right] \qquad (1)$$

where *i* indexes the individual, *j* indexes the state in which the individual resides, and *t* indexes the year. In this equation, *L* equals 1 if the individual works and equals zero otherwise. Summary statistics in Table 2 show that 14.1 percent of the men in the sample are working and 10.4 percent of women are working.[7] Need to redo summary stats table to make sure numbers are correct.

As discussed earlier, many studies of labor supply are limited by the fact that wages are unobservable for non-workers. The HRS job histories and demographic and employment information allow us to calculate a potential wage, *w* for all individuals in our sample. We use

---

jobs, we are able to calculate an hourly wage. This measure is subject to division bias, which should bias any estimated labor force responses downward in absolute value (see Heim, 2005).

[6] State identifiers in the HRS are available through restricted access.

[7] B_1 and B_2 should be identical theoretically, because $\ln(1-\tau) + \ln w = \ln\left[(1-\tau)w\right]$. This may not be the case empirically however, either because workers may respond differently to the wage and tax rates, or because of heterogeneity in the wage that may be correlated with important unobserved characteristics.

the respondent's wage at their last job, education, race, Hispanic ethnicity, industry of last job, occupation of last job, and year of interview to predict this potential wage.[8] We use this potential wage in estimating (1) rather than the observed prior wage may have measurement error that varies systematically with one's taste for leisure. Specifically, the prior wage will be a noisier measure of the potential wage for respondents who have been out of the labor force longer, who may have a stronger taste for leisure.

Using the National Bureau of Economic Research's *TAXSIM* program for each year of the survey, we calculate the marginal tax rate a household faces on the first dollar earned, τ.[9] To do this, we set all earned income to zero before running *TAXSIM*. For married couples, we set earnings of both spouses to zero, and we use the same marginal tax rate for both spouses. We use marginal tax rate at zero earnings rather than the observed marginal tax rate given their actual earnings, because it is exogenous to their contemporaneous labor supply decision, whereas the observed marginal tax rate is a function of their chosen hours of work.

Variation in τ, the marginal tax rate comes from variation at both the state and the individual level. First, τ will be higher in states with higher tax rates. Second, for individuals with pension and/or Social Security income, τ will be higher in states that tax these types of income. Though τ also varies across individuals due to differences in unearned income, we explicitly control for unearned income, so the coefficient on $\ln(1-\tau)$ should not be picking up this variation. Since we also include state fixed effects, the coefficient on $\ln(1-\tau)$ should be identifying labor supply responses to the payoff to working that arise solely from the variation in the interaction of a household's unearned income and their state of residence.

The mean marginal tax rate on the first dollar earned ranges from 7 percent to 12 percent,

[8] Estimates from the prediction regression can be found in Appendix Table 1.
[9] TAXSIM is freely available at http://www.nber.org/taxsim/. The program is thoroughly described in Feenberg and Coutts (1993).

across the groups of male and female workers and nonworkers. It is significantly higher for those not working than those working. We also include a dummy variable equal to one if the individual is subject to the Social Security earnings test in the year observed. In 1998, individuals aged 65-69 would lose $1 of Social Security income for every $3 of earnings over the earnings threshold, which was $14,500 in 1998 (Haider and Loughran, 2005).[10,11]

Our measure of unearned income, *I*, is an after-tax measure that includes all non-wage income at the household level.[12] It is significantly higher among nonworkers than workers of the same gender. Working men have an average of about $30,000 unearned income while nonworking men have an average of about $35,000. Working women have unearned income of approximately $26,000, while nonworking women have unearned income of approximately $30,000. We also control for whether the respondent is a homeowner or receives a pension as proxies for financial security. Among both men and women, a significantly lower percentage of workers have pensions (approximately 50 percent) than nonworkers (over 60 percent). While working men have significantly higher home ownership rates than nonworking men, homeownership rates do not differ significantly between female workers and nonworkers.

Since households can also draw on their assets to supplement retirement income, we include the following asset values: home equity, IRAs, balances in defined contribution (DC) pension plans, and other wealth, which includes other real estate, stocks, bonds, certificates of deposit (CDs), bank balances, and automobile wealth. We also include a measure of debt. We scale household unearned income by 0.75 for married couples to account for economies of scale. Means in Table 2 do not show consistent differences in wealth among workers and nonworkers.

[10] Because the earnings test does not apply until one has worked a threshold number of hours, we expect it to be less relevant for the participation decision than for the hours decision.
[11] The earnings test was abolished in 2000, but we assume individuals considered the earnings test while making their labor supply decisions for 2000.
[12] We calculate the taxes that would be owed when earnings equal zero.

Male and female workers have significantly higher levels of debts and DC pensions. The higher level of DC pension balances among workers is likely due to the fact that upon leaving a firm, DC pension balances are often converted to IRAs or annuities. In addition, DC pension balances may be more subject to underreporting among nonworkers.[13] Nonworking women have greater home equity, IRA balances, and other wealth than working women, but there are no significant differences in these variables between working and nonworking men.

While we treat unearned income as exogenous to current labor supply decisions, it is clear that both assets and pension income are a function of past labor force decisions, and are therefore likely to be correlated with tastes for work and other unobservables that will affect the current labor supply decision. However, if those with higher assets and unearned income had stronger preferences for work, we would expect this bias to lead to a positive relationship between unearned income and labor supply. This would bias us against finding the negative relationship that would be predicted by theory.

The *X* vector includes indicator variables for single year of age, since, as illustrated in Figure 2, there is a strong negative relationship between age and labor supply for this group. It also controls for marital status, health status (indicators for in excellent or very good health, in fair or poor health, with good health as the excluded category), and a series of expectations variables. These variables control for differences in expectations about the economy or financial security that might also affect the decision to return to work. The HRS asks respondents to report on a scale from 0 to 100 how likely it is that: a) their income will keep up with inflation for the next five years; b) that they will live to be older than 85; c) that they will leave an inheritance of

[13] It is possible that changes in the value of assets, perhaps due to changes in stock prices over the time period of our sample, could themselves cause changes in labor supply. The evidence on the effects of such changes is mixed (see Kezdi and Sevak (2004) and Eschtruth and Gemus (2002). By controlling for year effects and the value of the assets, we partially control for such effects.

$10,000 or more; and d) that they will need to give major financial help to family members over the next ten years. Male workers report a higher probability of giving financial help to family members, but workers and nonworkers do not differ much in other expectations.

We include *U,* the county level unemployment rate in a given survey year, to account for regional fluctuations in labor demand. Finally, we include state fixed effects, *S,* in all of our analyses to capture the effects of any time-invariant state characteristics that may affect labor supply. This is important because some of these characteristics may be correlated with the tax structure of the state.[14]

We restrict our sample to individuals 65 and older because most of these individuals will already have retired from their "career jobs."[15] By focusing on the population that has already retired, we are implicitly treating previous labor supply histories as exogenous to post-retirement labor supply decisions.[16] This is a reasonable assumption for much of the population if, during their working years, individuals assume that they will retire at some point close to age 65. Because individuals who have retired from a job but are currently working for pay may be less likely to identify as retired, we select our sample of "retirees" based on age, rather than a respondent's self-reported retirement status. This avoids sample selection bias that would arise if we selected our sample based on self-reported retirement status. We exclude individuals who are or were self employed mainly because wage measures were often missing and noisy for them. In addition, retirement may be a more gradual process for the self employed, and as a result, the dynamics of their labor supply decisions may be quite different than that of workers. Finally,

[14] Another concern is that some elderly households may have migrated across state in order to decrease tax exposure. However, the literature finds little evidence for this (e.g. Conway and Houtenville, 2001; Conway and Rork, 2004). We do not explicitly address migration of the households in our sample.

[15] Of the men in our sample, 88% report that they are retired (95% of those not working and 41% of those working), compared to 72% of women (78% of those not working and 22% of those working.

[16] A tremendous literature exists on the determinants of retirement timing and it is not the goal of this project to enhance that literature. See for example Stock, James H & Wise, David A, 1990. "Pensions, the Option Value of Work, and Retirement," *Econometrica*, vol. 58(5), pages 1151-80.

we adjust our standard errors to reflect the fact that the same individuals may be present in multiple waves of the HRS.

Estimated marginal effects and their standard errors from estimation of (1) by logistic regression can be found in Table 3.[17] We estimate separate equations for men and women. We estimate a positive and statistically significant effect of the log potential wage for both men and women. The marginal effect implies that a one percent increase in the wage is associated with a decrease in the probability of work of 0.00065 percentage points for men and 0.00036 percentage points for women.[18] This means that a 10 percent increase in the wage would raise participation by 4.6 percent for men and 3.5 percent for women. This positive estimated effect is consistent with standard labor supply theory, since labor force participation decisions generated by changes in wages must exhibit a dominant substitution effect.

The estimated effect of $\ln(1-\tau)$ is also positive and statistically significant at the five-percent level for both men and women, suggesting that a one percent increase in $(1-\tau)$, leads to an increase in the probability of working of 0.0011 percentage point for men and 0.0005 for women. This means that a 10 percent increase in the after-tax share of earnings would lead to increased participation of 7.9 percent among men and 4.9 percent among women. Since it is a nonlinear model, the effect of the tax rate will vary across individuals. To get another sense of the magnitude, we can consider an elderly man living in Wisconsin with $36,000 of unearned income (made up of Social Security and pension income) who would face a marginal tax rate of 32.9 percent on the first dollar he would earn in 2002. If he moved to Michigan, he would face a marginal tax rate of 22.5 percent. This means that he would earn 15.5 percent more for every dollar in Michigan than in Wisconsin. Our model predicts that the probability that he would work

[17] Coefficients available from the authors upon request.
[18] For right hand side variables that are in ln(X) form, it is necessary to divide the marginal effect by 100 to get the effect of a one percent increase in the variable X.

is 1.7 percentage points higher in Michigan than it would be in Wisconsin. Given that the participation rate among men is 14.1 percent, the lower tax rate in Michigan makes him about 12 percent more likely to work. The combined results from the wage and tax rate coefficients suggest that labor force participation of the elderly is responsive to the payoff to working.

The estimated coefficient on unearned income is also negative and significant for both men and women, consistent with a standard labor supply model in which leisure is considered to be a normal good. The marginal effect suggests a ten percent increase in unearned income would reduce the probability of working by 0.0008 percentage points for men, which is a 0.58 percent change in participation, implying a small participation income elasticity of 0.058.

Estimates for other variables are generally consistent with the differences between workers and non-workers observed in Table 2. Across some variables, both male and female workers seem to be in worse financial shape than non-workers. Those with pensions, with greater home equity, and with higher IRA balances are less likely to work. Married men are more likely to work, whereas married women are less likely to work, and those in better (self-rated) health are also more likely to participate in the labor force. The Social Security Earnings Test has a negative effect for men, but no statistically significant effect for women. The annual county level unemployment rate significantly affects the work behavior of both male and female retirees -- a one percent increase in the unemployment rate is associated with lower labor force participation of 0.00675 percentage points for men and 0.00491 percentage points for women. These estimates could suggest that older workers are the "first to go" when the economy turns. Another interpretation could be that when unemployment is high, retirees may be less likely to join the labor force.

We next run regressions separately by income third, to see if the responses to these economic factors vary by income level. This would not be surprising, given that greater unearned income is associated with lower participation rates. We use unearned income to group respondents. Results in Table 4 show that for both men and women, those in the middle third of the income distribution are the most responsive to the tax rate, and that there are not big differences by income in responsiveness to the wage. For men, those in the middle of the distribution of unearned income are the most responsive to unearned income. Among women, there are interesting differences by income in responsiveness to unearned income. Among the poorest third, greater unearned income is associated with reduced participation, as expected by theory and consistent with the results for men, but among the richest third, greater unearned income is associated with greater participation. It could be the case that among wealthy elderly women, labor supply is more like leisure than work.

In Table 5, we then estimate our equations separately by age, breaking the population into the younger old (ages 65-74) and the older old (75-85). For men, we find that they younger men are more responsive to all three economic variables - the wage, the tax rate, and unearned income, than are the older men. For women, the younger are more responsive to the wage and unearned income than are the older women, but both groups are equally responsive to the tax rate.[19]

The factors that influence whether an individual works should also influence how many hours they work. Although prime age workers may not have much control over how many hours they work (see Card (1990), Altonji and Paxson (1988), and Hausman (1980)), retirees may exhibit greater elasticity in their hours decision, given the significant amount of unearned income

[19] We have also estimated regressions separately by self-reported health status (breaking out those who report their health to be "excellent/very good" from those who report their health to be "good" and those who report their health to be "poor"). We find few differences in labor supply response among these dimensions.

received by many. This may be particularly true if the nonpecuniary benefits of work such as staying active and social are important. In the next section we examine the effect of wages and taxes on the hours that seniors work.

Estimating Determinants of Hours Worked

Analogous to equation (1) we estimate the following model of hours worked

$$\ln H_{ijt} = f\left[\beta_o + \beta_1 \ln w_{it} + \beta_2 \ln\left(1-\tau_{ijt}\right) + \beta_3 \ln I_{it} + X_{it}\delta + \sum_j S_j + \beta_4 U_{jt} + v_{it}\right] \qquad (2)$$

Because most retirees do not work, *H=0* for the majority of the sample, and OLS is not an appropriate method to estimate (3) among the sample of all retirees. We address this by restricting our sample to the sample of workers with positive hours of work.[20] For this sample of workers, we use the marginal tax rate that workers would face if they worked full time.[21] To do this, we impute full time earnings using the potential wage estimated in the prior section. For married couples, we do this assuming the higher earner works full time.

Table 6 presents results for equation (2). The estimate for the wage is not statistically significant for male workers. For female workers, a 10 percent increase in the wage leads to a 17.2 percent increase in hours worked. This estimate is statistically significant at the ten percent level. The tax rate does have a statistically significant effect for both men and women. The coefficient suggests that a ten percent increase in the hourly payoff to working $(1-\tau)$, arising from a reduction in the tax rate τ, results in an increase in hours worked of 5.3 percent for men

[20] We have estimated OLS and tobit regressions among the full sample of potential workers and our results mirror those of the participation equations [See Appendix Table 2]. Because most retirees report zero hours, this suggests that the dynamics of the participation decision dominate any dynamics of the hours decision when hours regressions are estimated on the full sample.

[21] We have also estimated specifications where we allow hours to be affected by both the marginal tax rate at full time hours and the marginal tax rate on the first dollar of income. We find no evidence that hours worked responds differently to these two tax rates.

and 3.6 percent for women. Using the example of Wisconsin and Michigan again, the results predict that a man living in Michigan with unearned income of $36,000, will work about 8.25 percent more hours than if he lived in Wisconsin, due to the fact that the marginal tax rate he would face in Michigan is 15.5 percent lower than the rate he would face in Wisconsin. Those with greater unearned income work significantly fewer hours. However, the coefficient implies a very small elasticity of hours with respect to unearned income of 0.03 for men and 0.05 for women.

The estimated effects of some covariates on hours worked are quite different than those on participation. The Social Security earnings test has a significant effect on hours worked for women whereas it had no effect on their labor force participation, although the reverse is true for men. The county unemployment rate, which had a large effect on the participation decision, has no effect on hours among those who are working. Similarly, while marital status had a significant effect on participation, it has no effect on hours worked among workers. Interestingly, the probability one places on living until age 85 has a significant effect on hours worked among workers – the greater the probability, the greater are hours worked, perhaps reflecting a fear of outliving ones resources.[22]

Discussion

Our results suggest that the labor force participation decisions of elderly Americans are responsive to economic factors. We consistently find that men and women with greater unearned income are less likely to work and that when they do work, they work fewer hours. In

[22] We have also examined whether our hours results differ by income level or by age, and find no differences in the responsiveness by groups. However, this could be due to the fact that the sample size (the number of workers and then stratified into a number of categories) becomes reduced, and coefficients are less precisely estimated.

contrast with other papers in this literature, our results suggest that differences in economic resources may help explain why some older Americans are working.

We find that a 10 percent increase in the (gross) potential wage is associated with labor force participation rates that are four to five percent higher for men and women. We also find that older workers are responsive, both on the extensive margin of participation and the intensive margin of hours worked, to the financial payoff from working generated by the tax code. Our estimates are that a reduction in the marginal tax rate that would increase the payoff to working by 10 percent would increase labor force participation by 7.9 percent among men and 4.9 percent among women. Among working retirees, a reduction in the marginal tax rate that would increase the payoff to working by 10 percent would results in an increase in hours worked of 5.3 percent for men and 3.6 percent for women.

We find that the participation decisions of the younger among the elderly are more responsive to these economic incentives. However, the tax rate remains a significant predictor of work among the older elderly. Our results also vary across by the level of unearned income. The tax rate appears to have the greatest effect among middle income individuals. However, we find that higher wages are a significant predictor of increased participation across income groups. This suggests that even though those with greater unearned income are less likely to work, they are still responsive to the economic payoff to working.

The responsiveness of older workers to the tax code suggests that public policy could influence elderly labor supply through this mechanism. This could prove extremely important in coming years as a greater share of the potential workforce reaches and passes the age of 65.

References

Altonji, Joseph G. and Christina H. Paxson. 1988. "Labor Supply Preferences, Hours Constraints, and Hours-Wage Trade-offs." *Journal of Labor Economics* 6: 254-76.

Auten, Gerald and Robert Carroll. 1999. "The Effect of Income Taxes on Household Income." *Review of Economics and Statistics*, 81(4): 681-93.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan. 2002. "How Much Should We Trust Differences-in-Differences Estimates?" NBER Working Paper #8841.

Blundell, Richard and Thomas MaCurdy. 1999. "Labor Supply: A Review of Alternative Approaches." In *Handbook of Labor Economics*, Volume 3A, Edited by Orley Ashenfelter and David Card. Amsterdam: North Holland.

Burtless, Gary and Robert A. Moffitt. 1985. "The Joint Choice of Retirement Age and Post-Retirement Hours of Work." *Journal of Labor Economics*, 3: 209-36.

Card, David. 1990. "Labor Supply with a Minimum Hours Threshold." *Carnegie-Rochester Conference Series on Public Policy* 33: 137-168.

Conway, Karen Smith and Andrew J. Houtenville. 2001. "Elderly Migration and State Fiscal Policy: Evidence from the 1990 Census Migration Flows." *National Tax Journal* 54 (1): 103-123.

Conway, Karen Smith, and Rork, Jonathan C. 2004. "State Income Tax Preferences for the Elderly," Unpublished manuscript, University of New Hampshire.

Eschtruth, Andrew, and Jonathan Gemus. 2002. "Are Older Workers Responding to the Bear Market? *Boston College Center for Retirement Research JTF Working Paper No. 5*

Favreault, Melissa, Caroline Ratcliffe, and Eric Toder. 1999. "Labor Force Participation of Older Workers: Prospective Changes and Potential Policy Responses." *National Tax Journal,* 52(3): 483-504.

Feenberg, Daniel and Elisabeth Coutts. 1993. "An Introduction to the *TAXSIM* Model." *Journal of Policy Analysis and Management*, 12(1): 189-94.

Friedberg, Leora. 2000. "The Labor Supply Effects of the Social Security Earnings Test." *Review of Economics and Statistics*, 82(1): 48-63.

Gruber, Jonathan and Peter Orszag. 2000. "Does the Social Security Earnings Test Affect Labor Supply and Benefits Receipt?" NBER Working Paper #7923.

Gustman, Alan L. and Thomas L. Steinmeier. 1986. "A Structural Retirement Model." *Econometrica,* 54: 555-84.

Gustman, Alan L. and Thomas L. Steinmeier. "What People Don't Know About Their Pensions and Social Security: An Analysis Using Linked Data From the Health and Retirement Study." In William G. Gale, John B. Shoven and Mark J. Warshawsky, editors, *Private Pensions and Public Policies*. Washington, D.C.: Brookings Institution, 2004.

Haider, Steven and David Loughran. 2001. "Elderly Labor Supply: Work or Play?" Unpublished manuscript, RAND.

Haider, Steven and David Loughran. 2005. "Do the Elderly Respond to Taxes on Earnings? Evidence from the Social Security Retirement Earnings Test." Michigan State University unpublished manuscript.

Hausman, Jerry A. 1980. "The Effect of Wages, Taxes, and Fixed Costs on Women's Labor Force Participation." *Journal of Public Economics* 14: 161-94.

Heim, Bradley T. 2005. "The Incredible Shrinking Elasticities: Married Female Labor Supply, 1979-2003." Duke University Unpublished Manuscript.

Juster, F. Thomas and James P. Smith. 1997. "Improving the Quality of Economic Data: Lessons from the HRS and AHEAD," *Journal of the American Statistical Association* 92 (440).

Kezdi, Gabor and Purvi Sevak. 2004. "Economic Adjustment of Recent Retirees to Adverse Wealth Shocks." Michigan Retirement Research Center Working Paper 2004-075.

Leonesio, Michael V. 1990. "The Effect of the Social Security Earnings Test on the Labor Supply Activity of Older Americans: A Review of the Empirical Evidence." *Social Security Bulletin* 53(5): 21-21.

Maestas, Nicole. 2004. "Back to Work: Expectations and Realizations of Work after Retirement." Michigan Retirement Research Center Working Paper 2004-085.

Moffitt, Robert A. and Mark Wilhelm. 2000. "Taxation and the Labor Supply of the Affluent." In, Joel Slemrod, ed. *Does Atlas Shrug? Economic Consequences of Taxing the Rich*. Russell Sage Foundation and Harvard University Press.

Pencavel, John. 1986. "Labor Supply of Men." In *Handbook of Labor Economics*, Volume I, edited by Orley Ashenfelter and Richard Layard. Amsterdam: North Holland.

Showalter, Mark H. and Norman K. Thurston. 1997. "Taxes and Labor Supply of High-Income Physicians." *Journal of Public Economics*, 66(1997): 73-97.

Stock, James H & Wise, David A, 1990. "Pensions, the Option Value of Work, and Retirement," *Econometrica*, vol. 58(5), pages 1151-80.

Figure 1: Labor Force Participation Rates Men 66-85

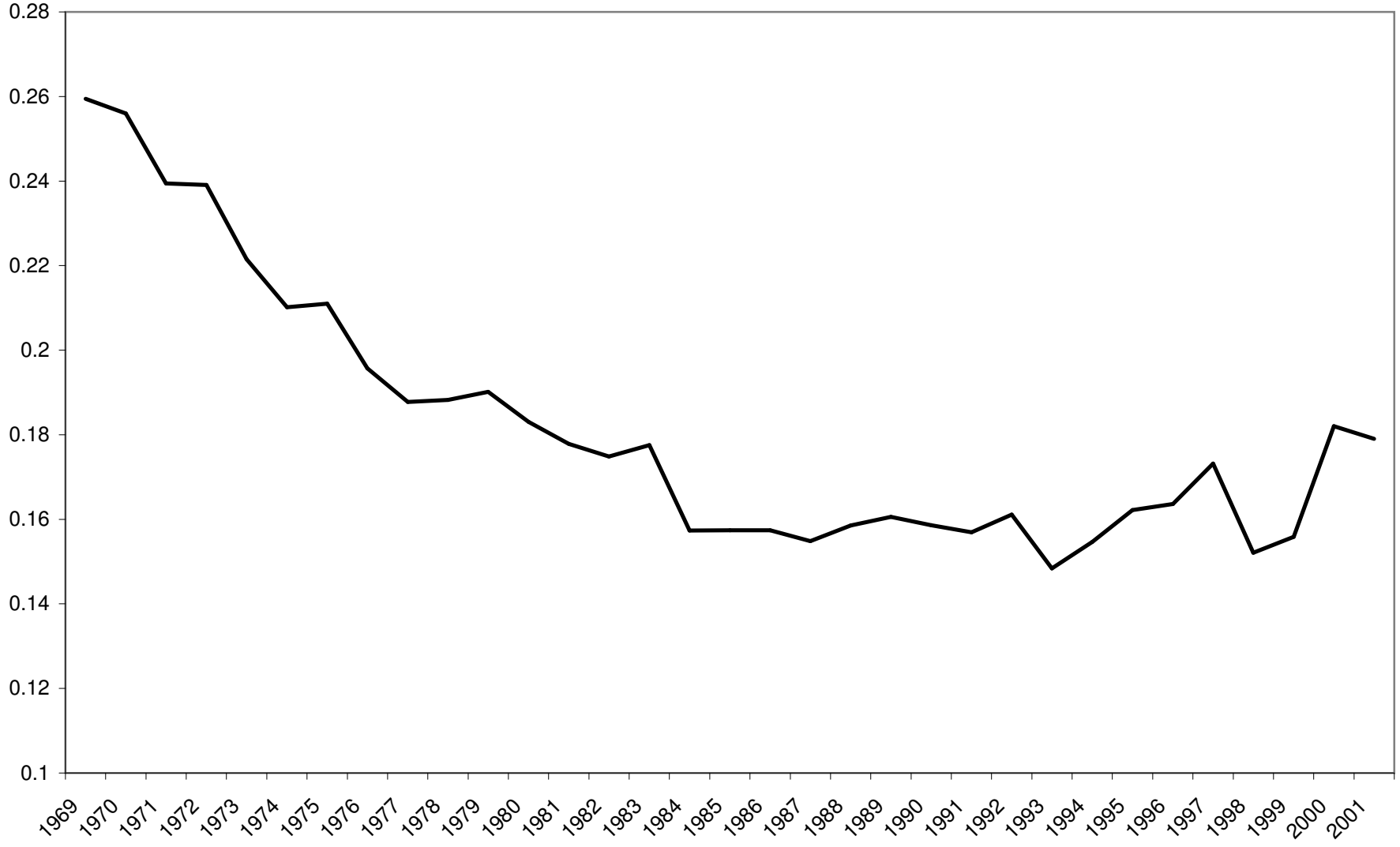

Figure 2
Percent of HRS Respondents Working For Pay in 1998, 2000, and 2002

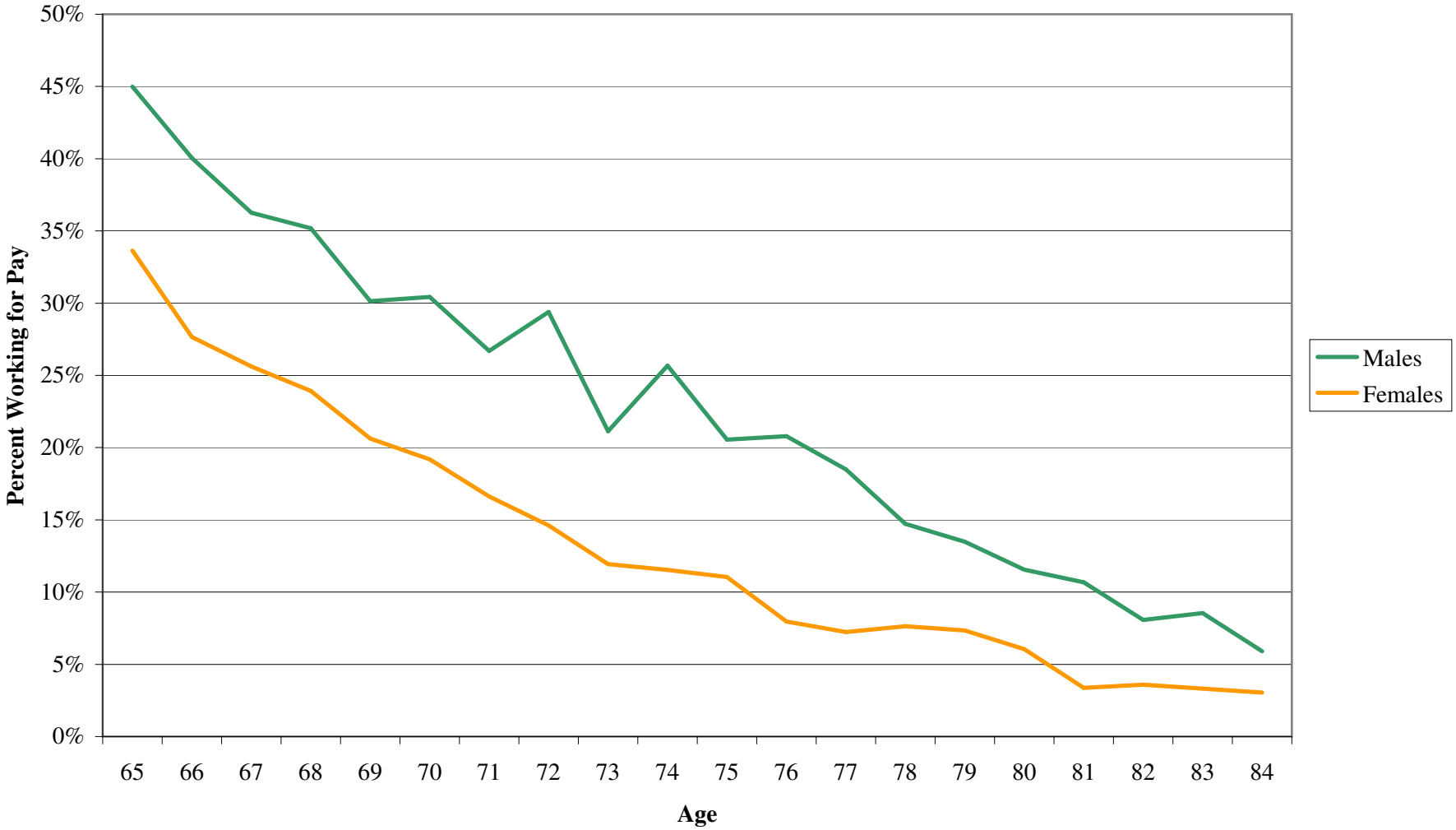

Table 1: Selected Features of State Tax Systems in 2003

	Social Security Taxed?	Tax Exemption for Private Pension	Highest Marginal Tax Rate on Earnings
Alabama	No	full	3.25
Alaska	No	full	0
Arizona	No	0	4.93
Arkansas	No	6000	7.43
California	No	0	9.86
Colorado	Yes	24000	4.77
Connecticut	Yes	0	5
Delaware	No	12500	6.13
DC	No	0	9.4
Florida	No	full	0
Georgia	No	15000	5.83
Hawaii	No	full	8.04
Idaho	No	0	7.89
Illinois	No	full	3
Indiana	No	0	3.4
Iowa	Yes	6000	8.38
Kansas	Yes	0	6.51
Kentucky	No	39400	6.18
Louisiana	No	6000	3.92
Maine	No	6000	8.75
Maryland	No	19900	4.83
Massachusetts	No	0	5.3
Michigan	No	37710	4
Minnesota	Yes	0	8.09
Mississippi	No	full	4.93
Missouri	Yes	6000	5.91
Montana	Yes	3600	7.66
Nebraska	Yes	0	7.65
Nevada	No	full	0
New Hampshire	No	full	0
New Jersey	No	15000	6.37
New Mexico	Yes	0	7.81
New York	No	20000	7.7
North Carolina	No	2000	8.5
North Dakota	Yes	0	5.41
Ohio	No	credit of 200	7.5
Oklahoma	No	5500	6.38
Oregon	No	credit of 9%	9.1
Pennsylvania	No	full	2.8
Rhode Island	Yes	0	9.28
South Carolina	No	10000	7.09
South Dakota	No	full	0
Tennessee	No	full	0
Texas	No	full	0
Utah	Yes	7500	5.91
Vermont	Yes	0	8.5
Virginia	No	0	5.83
Washington	No	full	0
West Virginia	Yes	0	6.5
Wisconsin	Yes	0	6.75
Wyoming	No	full	0

Table 2: Summary Statistics by Gender and Work Status

	Men				Women			
	Working (n=1176; 14.1%)		Not Working (n=7139; 85.9%)		Working (n=925; 10.4%)		Not Working (n=7927; 89.6%)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Wage	10.04	13.82	27.14	484.75	9.03	26.48	7.30	16.00
After-tax potential wage	7.40	10.81	17.86	301.38	6.83	19.83	5.20	11.15
MTR faced on First Dollar Earned	0.24	0.13	0.27	0.14	0.23	0.12	0.25	0.14
After-tax Unearned Income	$29,588	$36,403	$35,478	$44,565	$26,314	$37,558	$30,183	$41,615
SS Earnings Test Applies	0.40	0.49	0.21	0.41	0.45	0.50	0.23	0.42
Unemployment rate in county	0.05	0.02	0.05	0.02	0.05	0.02	0.05	0.02
Age	69.16	3.96	73.16	5.50	68.84	4.06	73.09	5.71
Married	0.86	0.35	0.78	0.42	0.47	0.50	0.49	0.50
Years of Education	12.62	3.24	11.66	3.66	12.70	2.43	11.94	3.03
Black Race	0.11	0.32	0.12	0.33	0.15	0.36	0.14	0.35
Hispanic	0.06	0.24	0.07	0.25	0.03	0.17	0.06	0.23
Health=Exc, Very Good	0.48	0.50	0.32	0.47	0.56	0.50	0.36	0.48
Health=Fair/Poor	0.17	0.37	0.36	0.48	0.13	0.33	0.32	0.47
Has Pension	0.54	0.50	0.69	0.46	0.52	0.50	0.61	0.49
Home Owner	0.88	0.33	0.83	0.37	0.81	0.39	0.79	0.40
Home Equity	$85,041	$122,729	$86,821	$142,934	$74,692	$94,261	$85,883	$138,634
IRA Balances	$42,665	$111,705	$39,244	$103,065	$31,607	$88,290	$34,146	$141,110
DC Pension Balances	$19,191	$106,253	$1,490	$32,947	$5,687	$32,494	$356	$8,518
Other Wealth	$127,123	$418,976	$133,515	$444,074	$83,061	$179,625	$119,896	$326,301
Debts	-$2,541	$18,494	-$1,304	$10,338	-$2,998	$25,592	-$1,177	$8,149
Expect to Live to 85	48.16	17.36	48.15	12.55	48.35	20.66	49.35	14.35
Expect Inflation	49.27	30.39	49.29	31.83	43.69	30.85	44.60	31.51
Expect to Leave Inheritance	73.25	32.72	70.21	36.03	63.86	39.36	63.23	39.37
Expect to Help Family Financially	40.10	35.26	35.72	35.65	21.93	31.17	24.91	32.70
n	1,176		7,047		925		7,845	

Notes: The tax rate is the marginal tax rate the respondent would face on the first dollar they earn. The wage is the wage at their prior job, adjusted by CPI.
See text for other variable definitions.

Table 3: Logit Estimates of Whether Respondent is Currently Working,
Among HRS Respondents Ages 65-85 in 1998, 2000, or 2002

	Men		Women	
	Marginal Effect (Standard Error)		Marginal Effect (Standard Error)	
ln(Wage)	0.065	**	0.036	**
	(0.013)		(0.009)	
ln(1-τ)	0.112	**	0.051	**
	(0.024)		(0.017)	
ln(Unearned income)	-0.008	**	-0.003	*
	(0.002)		(0.002)	
SS Earnings test applies	-0.016	**	-0.005	
	(0.008)		(0.006)	
Unemployment rate in county	-0.675	**	-0.491	**
	(0.21)		(0.165)	
Married	0.027	**	-0.022	**
	(0.009)		(0.006)	
Health=Exc, Very Good	0.020	**	0.036	**
	(0.008)		(0.007)	
Health=Fair/Poor	-0.064	**	-0.042	**
	(0.007)		(0.006)	
Has Pension	-0.044	**	-0.015	**
	(0.01)		(0.006)	
Home Owner	0.017		0.013	*
	(0.01)		(0.007)	
Home Equity	-0.00079		-0.00078	*
	(0.00067)		(0.00046)	
Other Wealth	0.00007		-0.00025	
	(0.00009)		(0.00017)	
Debts	-0.00353		-0.00638	**
	(0.00293)		(0.0027)	
IRA Balances	-0.00116	**	-0.00067	
	(0.00053)		(0.00043)	
DC Pension Balances	0.00400	**	0.01070	**
	(0.00132)		(0.00322)	
Expect to Live to 85	0.00028		-0.00022	*
	(0.00021)		(0.00014)	
Expect Inflation	-0.00021	*	0.00001	
	(0.00013)		(0.0001)	
Expect to Leave Inheritance	0.00022		0.00002	
	(0.00013)		(0.00009)	
Expect to Help Family Financially	0.00000		-0.00032	**
	(0.00012)		(0.0001)	
Mean of Y	0.141		0.104	
N	8,315		8,852	
Pseudo R-squared	0.180		0.183	

Notes: ** Denotes statistical significance at the 5% level and * at the 10% level.
Includes dummy variables for state and age. The wage is a predicted potential wage (see text for details).
The tax rate is the marginal tax rate the respondent would face on the first dollar they earn.

Table 4: Logit Estimates of Whether Respondent is Currently Working, by Income Third
Among HRS Respondents Ages 65-85 in 1998, 2000, or 2002

	Men		Women	
	Marginal Effect (Standard Error)		Marginal Effect (Standard Error)	
Poorest Third				
ln(Wage)	0.090	**	0.040	**
	(0.021)		(0.014)	
ln(1-τ)	0.023		-0.119	
	(0.105)		(0.078)	
ln(Unearned income)	-0.006	**	-0.005	**
	(0.002)		(0.002)	
Mean of Y	0.181		0.129	
N	2,762		2,902	
Pseudo R-squared	0.274		0.282	
Middle Third				
ln(Wage)	0.045	**	0.035	*
	(0.021)		(0.018)	
ln(1-τ)	0.102	*	0.115	*
	(0.056)		(0.062)	
ln(Unearned income)	-0.064	*	-0.014	
	(0.035)		(0.030)	
Mean of Y	0.129		0.120	
N	2,769		2,735	
Pseudo R-squared	0.161		0.142	
Richest Third				
ln(Wage)	0.060	**	0.034	**
	(0.023)		(0.013)	
ln(1-τ)	0.001		0.035	
	(0.035)		(0.022)	
ln(Unearned income)	-0.007		0.025	**
	(0.012)		(0.008)	
Mean of Y	0.120		0.077	
N	2,620		2,886	
Pseudo R-squared	0.165		0.169	

Notes: ** Denotes statistical significance at the 5% level and * at the 10% level.

Includes dummy variables for state and age. The wage is a predicted potential wage (see text for details).

The tax rate is the marginal tax rate the respondent would face on the first dollar they earn.

Table 5: Logit Estimates of Whether Respondent is Currently Working, by Age
Among HRS Respondents Ages 65-85 in 1998, 2000, or 2002

	Men		Women	
	Marginal Effect (Standard Error)		Marginal Effect (Standard Error)	
Ages 65-74				
ln(Wage)	0.112	**	0.066	**
	(0.023)		(0.016)	
ln(1-τ)	0.192	**	0.065	**
	(0.042)		(0.031)	
ln(Unearned income)	-0.015	**	-0.007	**
	(0.004)		(0.003)	
Mean of Y	0.199		0.147	
N	5,309		5,557	
Pseudo R-squared	0.125		0.141	
Ages 75-84				
ln(Wage)	0.023	*	0.010	
	(0.012)		(0.007)	
ln(1-τ)	0.074	**	0.065	**
	(0.029)		(0.023)	
ln(Unearned income)	0.008		0.005	
	(0.008)		(0.004)	
Mean of Y	0.045		0.039	
N	2,539		2,756	
Pseudo R-squared	0.126		0.171	

Notes: ** Denotes statistical significance at the 5% level and * at the 10% level.
Includes dummy variables for state and age. The wage is a predicted potential wage (see text for details).
The tax rate is the marginal tax rate the respondent would face on the first dollar they earn.

Table 6: OLS Estimates of Log Hours Worked,
Among HRS Respondents Working for Pay, Ages 65-85 in 1998, 2000, or 2002

	Men		Women	
	Coefficient (Standard Error)		Coefficient (Standard Error)	
ln(Wage)	0.017 (0.093)		0.172 (0.103)	*
ln(1-τ)	0.533 (0.167)	**	0.361 (0.193)	*
ln(Unearned income)	-0.034 (0.01)	**	-0.048 (0.014)	**
SS Earnings test applies	-0.008 (0.062)		-0.180 (0.068)	**
Unemployment rate in county	0.384 (1.543)		-2.336 (2.02)	
Married	0.000 (0.079)		-0.036 (0.058)	
Health=Exc, Very Good	0.102 (0.056)	*	-0.012 (0.048)	
Health=Fair/Poor	0.093 (0.056)	*	-0.020 (0.073)	
Has Pension	-0.134 (0.055)	**	-0.043 (0.065)	
Home Owner	-0.030 (0.076)		-0.115 (0.062)	*
Home Equity	-0.00012 (0.00293)		-0.00014 (0.00394)	
Other Wealth	0.00148 (0.00074)	**	-0.00083 (0.00066)	
Debts	0.00687 (0.00583)		-0.00827 (0.00378)	**
IRA Balances	-0.00347 (0.00273)		-0.00686 (0.00351)	*
DC Pension Balances	0.00376 (0.00201)	*	0.01535 (0.00684)	**
Expect to Live to 85	0.00311 (0.00137)	**	0.00245 (0.00118)	**
Expect Inflation	0.00071 (0.0009)		0.00130 (0.00093)	
Expect to Leave Inheritance	-0.00050 (0.00081)		-0.00110 (0.00071)	
Expect to Help Family Financially	-0.00015 (0.00073)		0.00119 (0.00089)	
Mean of Y	29.69		25.74	
N	1,152		964	
R-squared	0.213		0.230	

Notes: ** Denotes statistical significance at the 5% level and * at the 10% level.

Includes dummy variables for state and age. The wage is a predicted potential wage (see text for details).

The tax rate is the marginal tax rate the respondent would face at full time work.

Appendix Table 1: OLS Regression of Log Wage

Among HRS Respondents Ages 65-85 in 1998, 2000, or 2002

	Men				Women			
	All		Workers		All		Workers	
Age	0.318	**	-0.404	**	0.407	**	-0.109	
	(0.054)		(0.137)		(0.064)		(0.144)	
Age squared	-0.002	**	0.003	**	-0.003	**	0.001	
	(0)		(0.001)		(0)		(0.001)	
Black Race	-0.034		-0.015		0.099	**	0.021	
	(0.04)		(0.064)		(0.044)		(0.074)	
Hispanic	-0.032		-0.008		0.140	**	0.074	
	(0.057)		(0.063)		(0.06)		(0.137)	
Years of Education	0.053	**	0.048	**	0.062	**	0.056	**
	(0.005)		(0.008)		(0.007)		(0.011)	
Occupation of Last Job (Agriculture is the excluded group)								
Mining & Construction	0.209	*	0.321		0.595	*	0.462	*
	(0.12)		(0.213)		(0.331)		(0.274)	
Manufacturing: Non Durable	0.106		0.086		0.442		0.035	
	(0.12)		(0.206)		(0.322)		(0.208)	
Manufacturing: Durable	0.198	*	0.185		0.583	*	0.003	
	(0.118)		(0.198)		(0.325)		(0.207)	
Transportation	0.279	**	0.104		0.711	**	0.213	
	(0.119)		(0.197)		(0.334)		(0.18)	
Wholesale	0.100		0.237		0.543		0.286	
	(0.143)		(0.214)		(0.33)		(0.209)	
Retail	-0.136		0.190		0.198		-0.032	
	(0.123)		(0.204)		(0.327)		(0.177)	
Finance, Ins., & Real Estate	0.042		-0.001		0.554	*	0.040	
	(0.133)		(0.231)		(0.324)		(0.192)	
Business and Repair Services	0.021		0.135		0.512		-0.044	
	(0.124)		(0.204)		(0.33)		(0.191)	

Appendix Table 1: OLS Regression of Log Wage (continued)

Among HRS Respondents Ages 65-85 in 1998, 2000, or 2002

	Men				Women			
	All		Workers		All		Workers	
Personal Services	-0.223		0.903	*	0.193		-0.050	
	(0.172)		(0.503)		(0.33)		(0.184)	
Entertainment & Recreation	0.123		0.151		0.542		-0.090	
	(0.205)		(0.314)		(0.437)		(0.22)	
Professional and Related Services	0.079		0.173		0.468		0.036	
	(0.12)		(0.214)		(0.321)		(0.175)	
Public Administration	0.268	**	0.042		0.726	**	-0.134	
	(0.123)		(0.214)		(0.324)		(0.203)	
Not Known	0.219	*	-0.081		0.551		-0.242	
	(0.132)		(0.216)		(0.356)		(0.289)	
Industry of Last Job (Managerial is the excluded group)								
Professional Specialty Operation	0.011		0.101		-0.006		-0.022	
	(0.049)		(0.119)		(0.063)		(0.103)	
Sales	-0.080		-0.315	**	-0.267	**	-0.244	**
	(0.078)		(0.114)		(0.077)		(0.088)	
Clerical and Administrative Support	-0.401	**	-0.368	**	-0.360	**	-0.253	**
	(0.059)		(0.099)		(0.057)		(0.085)	
Service: Private Household cleaning & building	-0.325		-0.775		-0.493	**	-0.370	**
	(0.303)		(0.491)		(0.127)		(0.161)	
Service: Protection	-0.417	**	-0.345	**	-0.402	**	-0.478	**
	(0.082)		(0.112)		(0.176)		(0.124)	
Service: Food Preparation	-0.263	**	-0.973	**	-0.402	**	-0.367	**
	(0.117)		(0.467)		(0.085)		(0.097)	
Health Services	-0.590	**	-0.662	**	-0.390	**	-0.312	**
	(0.224)		(0.155)		(0.075)		(0.101)	
Personal Services	-0.378	**	-0.270	*	-0.482	**	-0.447	**
	(0.082)		(0.148)		(0.077)		(0.105)	

Appendix Table 1: OLS Regression of Log Wage (continued)

Among HRS Respondents Ages 65-85 in 1998, 2000, or 2002

	Men				Women			
	All		Workers		All		Workers	
Farming, Forestry, and Fishing	-0.510	**	-0.297		-0.059		-0.339	
	(0.112)		(0.208)		(0.489)		(0.209)	
Mechanics and Repair	-0.163	**	-0.316	**	0.123		(dropped)	**
	(0.052)		(0.099)		(0.137)		(0)	
Construction trade and extractors	-0.202	**	-0.161		-0.786	**	(dropped)	**
	(0.061)		(0.112)		(0.188)		(0)	
Precision Production	-0.200	**	-0.265	**	-0.526	**	-0.160	
	(0.06)		(0.114)		(0.139)		(0.152)	
Operators: Machine	-0.362	**	-0.220	**	-0.537	**	-0.234	*
	(0.055)		(0.095)		(0.087)		(0.128)	
Operators: Transport	-0.378	**	-0.206	**	-0.462	**	-0.419	**
	(0.068)		(0.093)		(0.221)		(0.094)	
Operators: Handlers	-0.503	**	-0.354	**	-0.435	**	0.110	
	(0.064)		(0.097)		(0.119)		(0.161)	
Armed Forces	-1.030	**	0.205		-0.314		-0.023	
	(0.143)		(0.23)		(0.193)		(0.152)	
Not Known	0.144				-0.763	**	-0.240	
	(0.226)				(0.316)		(0.242)	
Year=2000	-0.005		0.070	*	0.046	**	0.115	**
	(0.01)		(0.041)		(0.01)		(0.039)	
Year=2002	0.021		0.251	**	0.094	**	0.330	**
	(0.014)		(0.041)		(0.014)		(0.041)	
N	8,495		1,199		9,040		994	
R-squared	0.183		0.210		0.235		0.234	

Notes: ** Denotes statistical significance at the 5% level and * at the 10% level. Robust standard errors in parentheses.

The wage is the prior wage in the regression of all respondents and the current wage in the regression of current workers.

Appendix Table 2: OLS Estimates of Hours Worked,
Among All HRS Respondents, Ages 65-85 in 1998, 2000, or 2002

	Men		Women	
	Coefficient (Standard Error)		Coefficient (Standard Error)	
ln(Wage)	2.69 (0.56)	**	2.08 (0.4)	**
ln(1-t)	2.93 (0.86)	**	1.54 (0.61)	**
ln(Unearned income)	-1.07 (0.21)	**	-0.69 (0.17)	**
SS Earnings test applies	-1.51 (0.57)	**	-0.97 (0.42)	**
Unemployment rate in county	-20.78 (7.62)	**	-19.30 (4.61)	**
Married	1.23 (0.39)	**	-0.59 (0.28)	**
Health=Exc, Very Good	1.14 (0.36)	**	1.36 (0.27)	**
Health=Fair/Poor	-2.08 (0.3)	**	-1.27 (0.23)	**
Has Pension	-2.03 (0.4)	**	-0.81 (0.27)	**
Home Owner	0.45 (0.44)		0.26 (0.36)	
Home Equity	-0.0042 (0.0114)		-0.0112 (0.0107)	
Other Wealth	0.0033 (0.0035)		-0.0064 (0.0021)	**
Debts	-0.1718 (0.1434)		-0.3078 (0.0997)	**
IRA Balances	-0.0502 (0.0189)	**	-0.0182 (0.0098)	*
DC Pension Balances	0.2571 (0.0587)	**	0.9121 (0.2311)	**
Expect to Live to 85	0.0469 (0.0154)	**	-0.0006 (0.0103)	
Expect Inflation	-0.0074 (0.0053)		0.0028 (0.0044)	
Expect to Leave Inheritance	0.0113 (0.0052)	**	0.0001 (0.0042)	
Expect to Help Family Financially	0.0009 (0.0048)		-0.0073 (0.0042)	*
Mean of Y	4.03		2.63	
N	8,383		8,901	
R-squared	0.152		0.122	

Notes: ** Denotes statistical significance at the 5% level and * at the 10% level.
Includes dummy variables for state and age. The wage is a predicted potential wage (see text for details).
The tax rate is the marginal tax rate the respondent would face at full time work.