Hours Flexibility and Retirement *

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May 2002

Abstract

This paper presents a simple model which predicts that workers who are not free to lower their usual hours of work at their jobs should be more likely to retire by some later date. Data from the Health and Retirement Study indicates that hours constraints are a prevalent feature of the jobs held by workers at the cusp of retirement. A series of empirical tests finds the effect suggested by the model. The results are robust to tests which account for sorting and measurement error. The amount by which facing hours constraints is estimated to raise retirement probabilities is nearly as large as the effect for being in poor health, suggesting that the effect we estimate is economically quite significant.

*We are grateful for comments from Robert Barsky, John Bound, Rebecca Blank, Charles Brown, John Dinardo, and Matthew Shapiro. Charles gratefully acknowledges support from the National Institutes of Aging.

1 Introduction

Standard models of labor supply depict workers as being able to work any positive amount of hours they wish at the competitive wage to paid to persons of their type. Implicit in these models is the assumption that employers offer to workers, at a particular wage, a menu of infinitely many hours options from which the workers choose. But this assumption seems fundamentally at odds with how the labor market functions. In particular, the distribution of weekly hours of work suggests that workers may be offered only a limited set of hours options by employers.[1] This paper examines how employer-imposed minimum hours of work requirements affects workers' retirement decisions.[2]

We present a simple theoretical framework which shows that workers who cannot lower their hours of work in one period are more likely to retire by some subsequent date than are workers not so constrained. The intuition is easy to explain. Given his characteristics and the wage he commands, there is a particular hours level which a person *desires* to work in any period. Equivalently, between any two time periods, a worker initially working a given amount desires that his hours *change* over time by a particular amount. For workers with jobs with flexible hours, the *actual* change in hours worked over time always perfectly matches the *desired* change. If the worker desires to withdraw from the labor force, then he does. If he desires to work fewer positive hours in the later period, he changes his labor supply to precisely the desired

[1] Innumerable authors have shown that the distribution of actual hours worked in the week peaks dramatically at exactly forty hours, with very few prime aged men working between 30 and 35 hours, for example. This type of distribution is very unlikely to be the result of the worker preferences.

[2] Many previous authors have studied hours constraints in the labor market, though the effect on retirement has received very little attention. Ashenfelter (1980), Biddle and Zarkin (1988), Deaton and Muellbauer (1981), Ham (1982) Dickens and Lundberg (1993) all assess either the impact of hours constraints on hours of work in the cross section. Altonji and Paxson (1991) study how the association between job changes and changes in preferences is affected by hours restrictions in the labor market. Kahn and Lang (1991) use a Canadian dataset, the Canadian Labor Force Survey, to examine more carefully than most other studies have been able to how actual hours deviate from desired hours.

level.

For workers with the same desired change in labor supply, but who face hours constraints, the only way to lower hours of work from one positive amount to another is to change jobs. Because such job changes are associated with transitions costs, the worker chooses from among a set of less than ideal options. He can continue at the present job and be "over-employed". He can pay a transition cost and work the desired hours level at a new job. Or, he can withdraw completely from the labor force. Thus, unlike the worker whose hours are flexible, the hours-constrained worker retires both when he desires to work 0 hours *and* when he wishes to work some positive amount much lower than he did previously but faces high transition costs.

We test the prediction that workers with hours constraints are more likely to retire over time using a sample of retirement-aged people from the Health and Retirement Study (*HRS*). We find that a large fraction of workers aged 50-60 cannot lower their usual weekly hours of work in 1992. These constraints are prevalent for both men and women; among people working many different hours levels; and across all types of jobs. Exploiting the panel feature of the data, and using a series of empirical tests, we find that constrained workers are much more likely to be retired by 1996. We document few differences in observables between constrained and non-constrained workers, suggesting that the results do not derive from any differences in latent retirement probabilities between workers, or to un-measured aspects of their jobs. Moreover, we control carefully for demographic and job information. We also conduct some simple tests to assess the likelihood that the results derive from sorting or measurement error and find that the findings are robust to these analyses.

The paper's emphasis that hours constraints make it difficult for workers to satisfy changing labor supply preferences without changing jobs is very similar in spirit to Altonji and Paxson (1991). Altonji and Paxson show that in a sample of prime aged

women, events likely to generate large changes in labor supply preferences, such as the birth of a child, or a child starting school, tend to be associated with large changes in hours of work only for persons who change jobs. Like nearly all of the previous literature on hours constraints, their work is not about retirement, and uses a model quite different from the one we present, but it is easy to see how our results build on that work.

More directly related to the present paper is work by Gustman and Steinmeieier (1983, 1984). Gustman and Steinmeier (1983) review evidence from the Panel Study of Income Dynamics (PSID) and a survey of about 300 persons conducted by the American-Society for Personnel Administration and the Bureau of National Affairs. The review shows that many retirement aged workers were indeed hours constrained in the time period studied. Gustman and Steinmeier (1984) find that reductions in the intensity of labor supply tend to occur with job changes. This result is very similar to the Altonji and Paxson evidence discussed above. However, it is only indirect evidence about whether hours constraints affect retirement in the manner suggested in this paper because no data on whether individual workers are constrained or not is used. We extend this previous work.

The results in the paper are consistent with other evidence about workers' labor supply behavior as they move through the retirement years. It is now known that many mature workers prior to completely withdrawing from the labor force, leave career jobs which they have held for many years to move into what Ruhm (1990) has called "bridge jobs" - places at which much lower hours are worked than in their "career" jobs. This suggests that workers cannot perfectly adjust hours at their career jobs - something which the evidence in this paper confirms. In addition, the paper shows that, because the transition costs associated with switching to new jobs may be high, the constraints have the effect of making many workers withdraw completely from the labor force.

The paper also extends work on the determinants of retirement. Most research by economists on the causes of retirement has emphasized either purely worker side factors such as the effect of age or poor health. Another strand of the literature examines how the various features of the various public programs, such as SSI or SSDI affect retirement propensities. Relatively little work examines how features of people's jobs affect when they leave the labor force. The results presented below show that at least one of these job factors may be key determinants of retirement.

The next section presents a simple two-period model of labor supply and retirement under hours constraints. Section 3 discusses the empirical implementation. The data are discussed and summary statistics presented in Section 4. Various empirical estimates and robustness tests are presented in Section 5. Section 6 concludes.

2 A Simple Theoretical Framework

Consider workers who in any period t derive utility from leisure and income and from an idiosyncratic taste-shifter, ϵ_i. Let workers be endowed with a positive amount of leisure time and let them consume some of it as leisure. Their income is the wage multiplied by the remainder, their hours of work. We ignore non-labor income. Since both leisure and income are functions of hours worked, we express utility as a function of hours worked in the period, h_{it} and the taste shifter, or, $U^i(h_{it}, \epsilon_{it})$. We assume that utility is strictly concave in hours of work.

For any value of the various parameters that determine labor supply, there is an hours level for which the person's utility is higher than would be true for any alternative level of labor supply. We denote this hours level by $h^*_{it} \geq 0$ and call it the person's *desired labor supply* in period t. By definition, this desired hours level is given implicitly by the condition $U^i_h(h^*_{it}, \epsilon_{it}) = 0$, where U^i_h is the partial derivative of utility U^i with respect to h. Taking a second order Talyor series expansion of utility around the point

h^*_{it}, the utility that an individual receives when he works any arbitrary hours level h_{it} is thus

$$U^i(h_{it}, \epsilon_i) = U^i(h^*_{it}, \epsilon_i) + (h^*_{it} - h_{it})U^i_h(h^*_{it}, \epsilon_i) + (h^*_{it} - h_{it})^2 U^i_{hh}(h^*_{it}, \epsilon_i) \quad (1)$$

Since the second part of the expression above equals 0 by the definition of the desired hours level h^*_{it}, and since U^i_{hh}, the second derivative of utility with respect to hours, is strictly negative because of the concavity of the utility function, the expression simplifies to

$$U^i(h_{it}, \epsilon_i) = U^i(h^*_{it}, \epsilon_i) - \kappa(h^*_{it} - h_{it})^2 \quad (2)$$

where κ is some positive constant. In other words, the utility which people derive from working any particular amount of hours equals the utility they would receive from working their desired hours *minus* an amount which is increasing in the extent to which hours they work depart from the level they desire. The quantity $\kappa(h^*_{it} - h_{it})^2$ can be thought of as the dis-utility that a person gets when he is over- (under-) employed and working more (less) than he wishes to.

Consider now an economy in which workers, with preferences of the sort described above, work for two periods. All firms in the economy pay a worker with observed characteristics X_i an hourly wage of $w(X_i)$. Firms differ with respect to the minimum number of hours they require employees to work each week in order to receive this market wage. For some firms, there is no minimum hours requirement at the relevant wage, so workers can, from one time period to the next, change their hours to any level they wish. Other firms require their employees to work in every period at least a specific level of hours in order to receive the market wage. At these "hours constrained" firms, usual weekly hours cannot lowered from one time period to the next, to a level below the required amount, so a worker must change jobs if he wishes to work less than the required amount.

At the start of the first period, suppose workers know how many hours they wish to work in period 1. They take a job which offers them that hours level. When they take this job, let workers not know whether the firm is hours constrained or not. Instead, suppose that workers learn this sometime during the first period of work. Thus, whether a firm is hours-constrained or not is an experience good - something learned only after the worker has been employed for at least 1 period. We focus on workers' decisions between periods 1 and 2. Workers must choose whether to: (a) remain at their incumbent (first period) employers; (b) switch to new firms, after paying a transition cost of θ ; or (c) withdraw completely from the labor force (retire) between the first and second periods. In the remainder of the analysis, we focus on workers who work h'_{i1} hours in the first period at their incumbent employers, and whose desired hours of work in period 2 are $h^*_{i2} \geq 0$.

Consider first the case where the worker is *not* hours constrained at the incumbent employer. In this case the worker's period 2 labor supply is always simple to figure out. If his desired period 2 hours, h^*_{i2}, equal 0, then the worker retires in the second period. If he wishes to work some positive amount in period 2 different from h'_{i1}, he simply changes his labor supply to the new desired level at the incumbent firm, there being no restrictions on any such adjustments at unconstrained jobs. For workers whose hours are flexible, there is thus no difference between the desired change in hours and actual change in hours over time. The worker retires if and only if working 0 hours in the later period brings him greater utility than working any positive hours level - that is, if his desired hours of work in the later period equal 0.

Now consider a worker whose minimum hours at the period 1 job are not flexible downwards. If h^*_{i2} is 0, then the worker prefers retirement over any option which involves positive labor supply and, as in the "unconstrained" case, will choose to retire. And, if $h^*_{i2} > h'_{it}$ the worker will remain at the first period employer and increase his

hours of work. If $0 < h^*_{i2} < h'_{it}$, however, things are much less clear. The worker can remain at the incumbent employer during period 2 and work h'_{i1} hours. By (2), his second period payoff would be

$$U^i(h^*_{i2}, \epsilon_i) - \kappa(h^*_{i2} - h'_{i1})^2 \tag{3}$$

if he were to choose this option. A second option would be to move to a new firm, at which he could work h^*_{i2}. Since a transition cost of θ would be incurred in the event of such a move, his period 2 payoff from this second option is

$$U^i(h^*_{i2}, \epsilon_i) - \theta. \tag{4}$$

Finally, he could retire, in which case his period 2 payoff is

$$U^i(h^*_{i2}, \epsilon_i) - \kappa(h^*_{i2})^2. \tag{5}$$

Clearly, the option that the hours-constrained worker chooses depends on which of the three quantities $\kappa(h^*_{i2} - h'_{i1})^2$, θ, or $\kappa(h^*_{i2})^2$ is smallest. Expressions (3)-(5) summarize the paper's main result: despite the fact that his desired hours of work are some *positive* amount, smaller than what he worked in the first period, a worker would nonetheless *retire* in the second period if

$$h^*_{i2} \leq \min\left[\frac{h'_{i1}}{2}\ ,\ \sqrt{\frac{\theta}{\kappa}}\right] \tag{6}$$

We assume henceforth that $\min\left[\frac{h'_{i1}}{2}\ ,\ \sqrt{\frac{\theta}{\kappa}}\right] = \sqrt{\frac{\theta}{\kappa}}$, and that $\kappa = 1$.[3]

The foregoing implies that in a sample of workers working a given amount of hours in period 1, the probability that a worker whose hours are flexible at the incumbent firm will retire by period 2 is

$$Pr[h^*_{i2} = 0]. \tag{7}$$

[3]Both of these assumption are completely innocuous. None of the main results below is affected by them in any way and both ease exposition.

By contrast, among workers whose usual weekly hours cannot be lowered, the probability of retirement by period 2 is

$$Pr[h_{i2}^* \leq \sqrt{\theta}] = Pr[h_{i2}^* = 0] + Pr\left[h_{i2}^* > 0 \cap h_{i2}^* \leq \sqrt{\theta}\right] \tag{8}$$

So long as the second part of the probability above is non-zero, the probability of retirement from one period to the next should be greater among people who were not free to vary their hours in the earlier time period.

3 Empirical Implementation

To empirically implement the model in the previous section, we suppose that an individual's desired hours of work in any period h_{it}^* may be written as

$$h_{it}^* = \begin{cases} w(X_i) - \beta X_{it} - \delta h_{i,-t} - \epsilon_i & \text{if } w(X_{it}) - \beta X_{it} - \delta h_{i,-t} > 0 \\ \\ 0 & \text{otherwise} \end{cases} \tag{9}$$

In (9), X_{it} is a vector of the person's observed characteristics, such as his age, gender, sex and education. The person wage $w(X_{it})$ is a function of observable traits. The term $h_{i,-t}$ refers to the hours of work the person worked in a time period previous to t. As before, ϵ_i is a person specific taste shifter, which we assume henceforth is drawn from the standard Normal distribution. Formulation (9) implies that the quantity $\beta X_{it} + \delta h_{i,-t} + \epsilon_i$ is the person's reservation wage, and is easily generated from many standard utility functions assumed in the labor supply literature.

Let the binary variable $C_{i,-t}$ equal 1 if in the time period previous to t the person works at a job at which it is not possible to alter hours of work. And, let the binary variable R_{it} equal 1 if a person employed in previous time period retires by time period t.

From expression (7) and (8), the probability that R_{it} equals 1 can be written

$$Pr[R_{it} = 1] = Pr[h_{it}^* \leq C_{i,-t} * \sqrt{\theta}]. \tag{10}$$

And, using (9), this probability is in turn

$$Pr[R_{it} = 1] = Pr[w(X_{it}) - \beta X_{it} - \delta h_{i,-t} - C_{i,-t} * \sqrt{\theta} \leq \epsilon_i] \tag{11}$$

Because ϵ_i is drawn from a standard Normal distribution, (11) can be written

$$Pr[R_{it} = 1] = 1 - \Phi\left(w(X_{it}) - \beta X_{it} - \delta h_{i,-t} - C_{i,-t} * \sqrt{\theta}\right) \tag{12}$$

and

$$Pr[R_{it} = 0] = \Phi\left(w(X_{it}) - \beta X_{it} - \delta h_{i,-t} - C_{i,-t} * \sqrt{\theta}\right) \tag{13}$$

where Φ is the cumulative of the Standard Normal Distribution.

These two expressions are, of course, the contribution of the retired and non-retired individuals to the probit likelihood function. Thus, to test the model's prediction that working in an hours constrained job in one period raises the probability of retirement by a later period, we estimate by maximum likelihood the probit system

$$\begin{aligned} R^*_{it} &= \alpha_1 Z_{it} + \alpha_2 C_{i,-t} + u_{it} \\ R_{it} &= 1 \text{ iff } R^*_{it} > 0 \end{aligned} \tag{14}$$

where Z_{it} is a vector of observable controls, including the wage, hours of work in the previous period, age, health and other factors, and $C_{i,-t}$ indicates that the person is not free to vary hours at the the job held in the previous time period. The estimated effect of the coefficient α_2 should be positive if the model is correct.

4 Data, Summary Statistics and Basic Facts

To conduct a test of the proposition outlined above, a data source which provides information on workers who are at the cusp of the retirement decision is required. Apart from standard demographic information, and information on usual features of the worker's jobs, there should obviously be information about whether the worker is

free to change his hours of work. Finally, since the model outlined above concerns a dynamic dimension of labor supply, the data source should be a panel data set. The Health and Retirement Study (HRS) meets all of these conditions.

The HRS is a nationally representative, longitudinal survey of households in which there is at least one person born between 1931 and 1941. The first wave of the survey was conducted in 1992. After the first wave, the same sample is surveyed approximately every two years, with data in any year conducted on age-eligible respondents and their spouses. The age range of the sample over the first three waves of the survey ensures that the sample is at the ideal age to study the determinants of retirement. Indeed, a desire to obtain information on people as they made the transition into retirement was a specific reason why the HRS was created.

We use data from the first three waves of the survey. The sample we analyze is restricted to persons: (a) aged between 55 and 64 in wave 1, who (b) work for pay in wave 1, but who are not self-employed, (c) who respond to the survey in both waves 2 and 3. Observations were dropped from this sample if information on age, race, education or health status was missing. We required also that there be basic job information available about the person's wave 1 employment, such the person's wage, usual hours of work, industry, and union status. If this information was missing, the respondent was dropped from the sample. Finally, if information on whether the person was free to change hours of work at the wave 1 employer was missing, the person was dropped from the sample. We discuss this important variable in greater detail below.

Importantly, the analysis sample is restricted to persons meeting the conditions above who worked at least twenty hours a week in Wave 1 of the data. We impose this restriction partly because we wish to study how hours constraints affect the retirement behavior of people with relatively strong labor force attachment. In addition, we wish

to drop from the analysis persons who are in the midst of adjusting their labor supply when they are initially observed. By focusing on people who are full time workers when first seen in the data, we can significantly satisfy this concern.

Table 1 presents the means and standard deviations of key variables for the analysis sample. Both the men and women in the sample are, on average, approximately fifty-eight years old in wave 1. Only about one quarter of both men and women rate their health as "excellent", while about 14 percent describe themselves being in "fair" or "poor" health. The health numbers likely are a result of the age distribution of the sample. The one noticeable difference in a demographic variable between men and women is the difference in the share who report that being married with a spouse present. More than eight-five percent of the male sample responds affirmatively to this question while only sixty percent of the women do. This difference too has to do with the age of the sample. Women tend to marry older men, and tend to live longer than men, on average. This means that in a relatively older sample such as this, women are much more likely than men to be widowed.

The next three variables measure job related characteristics. Men in the sample earn higher hourly wages than women, on average, and are more likely to be union members. Both the men and women in the sample have been employed by the firms at which they are initially observed for much more than a dozen years. For men, job tenure as of the first wave is more than twenty-one years, while it is almost sixteen years for women. These numbers indicate that, on average, the people in the sample had not begun making labor supply adjustments when they are observed in the first wave. Had this been true, average tenure would be much lower since workers would disproportionately have only recently moved into their jobs. It is thus unlikely that the workers in this sample have systematically sorted themselves into jobs with and without hours constraints based on their unobserved retirement propensities.

In the first wave of the *HRS* workers were asked:

> Not counting overtime hours, could you reduce the number of paid hours in your regular work schedule?

This is the key variable in the analysis performed in the paper. Affirmative response to this questions are coded as meaning that the worker is "hours-constrained", unable to lower his hours of work at his employer.

Figure 1 summarizes workers' wave 1 responses to this question. The figure splits workers into four usual weekly hours categories in Wave 1: those usually working between 20 and 29 per week; between 30 and 39 hours a week; exactly 40 hours a week; and more than 40 hours a week. The figure shows the fraction of all workers who fall into a particular hours category and, within a given category, the fraction of workers who cannot lower their usual hours of work.

Consider first the distribution of usual weekly hours of work. The figure illustrates the familiar fact that actual hours of work are quite lumpy, with many people located at exactly 40 hours of work a week. In the upper panel, for example, half of the working women in the sample usually work exactly this amount each week. For men, shown in the lower panel of the figure, the fraction working exactly 40 hours is almost sixty percent. As noted earlier, we study persons working at least 20 hours a week, so it is not surprising that labor force attachment, while slightly stronger for men, is strong for all persons in the sample in wave 1. Sixty-six percent of women work 40 hours or more in wave 1, while for men the comparable fraction is ninety percent. Many women work less than the traditionally "full time" amount: slightly more than twenty percent work between 30 and 39 hours and slightly less than almost ten percent work between 20 and 29 hours.

The figure shows that across all hours levels, employer-imposed hours constraints which prevent the worker from lowering usual hours of weekly work are prevalent for

both men and women, and tend to increase the greater the level of usual weekly labor supply. Fifty-percent of women working between 20 and 29 hours cannot lower their usual hours of work, nor can eighty percent of those working exactly 40 hours a week. Sixty percent of women in the other two hours categories are similarly constrained. For men, fifty percent of those in the lowest hours category cannot adjust hours, and eighty percent of those working exactly forty hours are constrained. The figure shows dramatically how pervasive a feature of the labor market is the lack of hours flexibility on the job. In the next section, we explore what effect these constraints have on subsequent retirement behavior.

5 Results

5.1 Simple Difference Estimates

We begin the analysis of the effects of hours constraints on subsequent retirement behavior with some simple difference estimates.

The outcome variable here and in all of the work which follows is a binary variable which denotes whether the person is "retired" as of the third wave of the HRS, conducted in 1996. Assessing whether workers are permanently and completely withdrawn from the labor force is difficult. Survey respondents may equate being "retired" with the receipt of benefits, or with having left a job held for much of their worklife. Thus, people who are labor force participants might classify themselves as "retired", while other whose labor force attachment has ended may not use this expression to describe themselves. Because of complications of this sort, we call workers "retired" in this paper when: (a) they are not working for pay as of the survey date (b) are not actively seeking work as of the survey date; and (c) have not worked for one year prior to the survey date. Throughout, we will be interested in whether workers are retired by our definition in the third wave of the survey.

Tables 2a and 2b report 1996 (wave 3) retirement rates by whether the worker was hours constrained in the job held in 1992 (wave 1). The first row is for the entire sample, and subsequent rows show relevant means by the person's age in 1992. Reading down the first two columns shows that, irrespective of 1992 hours contraints, retirement rates are generally increasing with the person's age in 1992. That the average 1996 retirement rate for women aged 62 and older in 1992 appears to deviate from this pattern is attributable to the fact that there are so few women in these age categories that the means are not at all reliable, as the associated standard errors indicate. The last column shows the difference in retirement rates by whether previously hours constrained, and the standard error of the difference, both by particular ages and for the sample as a whole.

Table 2a shows that overall, women who faced hours constraints were 6.4 percentage points more likely to be retired 4 years later than those who were not. This effect is strongly statistically significant. Given a mean retirement rate of about 24 percent, the difference in retirement rates suggests about a twenty five percent increase in the probability of retirement. The age specific numbers show that this effect is mainly from women aged less then 59 in 1992. This is not surprising. The Social Security System has large discontinuous retirement incentives which make labor force withdrawal very likely at ages 62 and older. These results show that on average, facing hours constraints raises the odds of women withdrawing from the labor force before the traditional early retirement age.

Table 2b presents the simple difference estimates for men. As for women, retirement rates rise with age, irrespective of previous constraint status. The first row of the table shows that previously hours constrained men have a systematically higher probability of retiring. The strongly significant 7.3 percentage point difference in retirement probabilities translates into about a twenty-five percent increase in retirement

probability. Like the results for women, some of the age-specific results are of the right sign, but not statistically significant. The difference across the sexes is where in the age profile the significant effects are found. In this sample of men, it appears that retirement before the age of 62 is relatively rare, irrespective of whether the person previously faced hours constraints or not. When hours constraints make retirement probabilities higher it appears to do so at men in at least their mid sixties - men aged between 60 and 62 in wave 1.

Despite the fact that some of the age-specific results are not statistically significant, these results are generally consistent with the theory presented earlier. But can the results be read as causal estimates? We briefly examine whether observable traits are similar for constrained and un-constrained workers. This comparison tells us two things. First, the extent to which observables differ between the groups is a good indicator of the gains from a more formal framework such as the probit presented below. Second, if observable factors are the same between hours constrained and non-constrained persons, then it is more likely that the results shown above do not derive from differences in unobservables between persons with hours constraints and those without. In effect, similar means for the two groups suggests "random assignment" of hours constraint status.

Table 3 presents the means of demographic and job-related variables by the worker's hours constraint status in the first wave. The first set of numbers indicates that for women, there is no difference in any of the demographic variables between workers who are hours constrained and those who are not. For men, the only demographic variable for which there is a difference between the two groups is in completed schooling: hours constrained men tend to be better educated. With respect to the job related variables, the only factor which, for both men and women, differs significantly between persons with hours constraints and those without is the incidence of unionization. Hours

constrained workers are much more likely to be union members.

Because there are differences in education and union status between the two types of workers, it does not appear that constraints are assigned randomly. The simple difference estimates thus cannot be interpreted as causal estimates. In particular, part of the difference between the average retirement behavior of the two types of workers could stem, not from their hours constraint status, but rather from the fact that something about unionized jobs or having high education. In the analysis below, we control for these effects in the next section. The results also suggest that there could be latent differences between constrained and un-constrained workers, possibly due to systematic sorting. Later, we perform some simple robustness tests to account for this possibility.

5.2 Probit Results

In this section we assess the effect of constraints on subsequent retirement using the probit model discussed above. A well known limitation of non-linear models like the probit is that the estimated coefficients say nothing about the size of the marginal effect of a slight change in the value of the associated exogenous variable. The probit coefficient gives only the direction of a marginal change. We therefore present not only the estimated coefficient and standard error, but also the estimated mean marginal effect for each variable, computed as the average over the sample of $\beta_j \phi(\beta X_i)$, where β_j is the estimated probit coefficient from characteristics x_j, and $\phi(.)$ is the marginal density of the standard Normal distribution, and X_i measures the characteristics of person i. The mean marginal effect we present is thus the average of the different estimated marginal effects for the individuals in the sample, and not the marginal effect evaluated at the mean of the various exogenous variables.[4]

[4]This is the estimate recommended by Chamberlain (1982).

Table 4a presents the probit results for women. For each variable, the table presents first the probit coefficient, then the associated standard error in parentheses, then the estimated marginal effect in squared brackets. The first column of Table 4a is a base specification, in which retirement in 1996 is related to standard demographic controls, and to controls for the worker's hours of work in 1992. We control for previous hours using a series of dummy variables indicating whether the person worked 20-29, 30-39, exactly 40, more than 40 hours.

Whereas differences in race and education produce no statistically significant effect on retirement probabilities, women who are married with a spouse present are more likely to retire. The estimated marginal effect suggests that the probability of retirement increases by about 6.3 percentage points for such women. The other two demographic factors appear to also be very important determinants of retirement behavior. Women who classify their health as "poor" or "fair" have a probability of retirement which is almost 10 percentage points higher than people whose self-assessed health is "excellent". And, in the this sample of women at the cusp of retirement, a marginal increase in age raises the probability of retirement by 7 percentage points.

The regression in the second column adds to this base specification the main variable of interest - a dummy variable measuring whether the worker was able to lower hours of work at the job held in 1992. None of the estimated effects for the demographic variables in the model changes in any appreciable way once this variable is added. The results indicate that being hours constrained raises the probability of subsequent retirement by about 6 percentage points. This is almost exactly the same point estimate as was found in the simple differences estimates above. The marginal effect is quite large; it it almost two-thirds the estimated marginal effect of being in poor health - the factor most commonly thought to be a determinant of early labor force withdrawal.

In the final regression in the third column of the table, we add three sets of job

related variables to determine if the effect we attribute to hours constraints are due instead to other features of a worker's job which might be correlated with hours flexibility on the job. For example, there may be "good" jobs, which not only allow workers to lower their hours but offer high compensation or other benefits. If workers are loath to leave such jobs because of these *other* characteristics, our analysis would incorrectly attribute this diminished retirement effect entirely to hours flexibility. Job quality is likely a multi-dimensional phenomenon which is difficult to measure, but we argue that the relevant dimensions of quality are likely summarized by these variables. One variable is the log of the woman's hourly wage on the job held in 1992. Another is a control for whether the person was a union member at that job. And, finally, we add a complete set of two-digit industry and occupation controls.[5]

The results in the last column show statistically significant effects of wages and union status for women, and though they are not presented in the table, the estimated effects for many of the industry and occupation controls are significant as well. Adding these job variables lowers the estimated marginal effect of the hours constraint variable by one half, though the effect remains statistically significant.

Table 4b presents the probit results for men. Overall, the base results presented in the first column are similar to those for women. Race and education have no significant effect on retirement probabilities for men in these age categories. Poor health and age have the largest marginal effect on retirement. Interestingly, the base specification shows that, unlike women, for whom being married with a spouse present raises the likelihood of retirement, no such effect is found for men. A likely explanation for this result is the age difference between typical spouses, and the fact that spouses may wish to retire jointly. Women in this age category have spouse who are older than they

[5]Because information on some of these variables is missing for a few people in the sample, the sample size is different in this regression for both men and women. The sample size is noted in the table. We estimate the regressions in the second column in Tables 3a and 3b on a sample for which the job information is present and the results are virtually identical to those presented in the table.

and thus almost certainly retired themselves. Spouses of the men in the sample are younger, and probably still working if they ever worked.

In the second column the hours constraint variable is added to the base specification. As for women, the inability to lower hours of work is estimated as having a very significant effect on retirement. Indeed, the increased marginal likelihood of retirement of almost 9 percentage points exceeds the simple difference estimates, and is among the largest marginal effects in the model. This is different from what obtains for the female sample. When controls for the man's hourly wage, industry and occupation affiliation and union status are added in the third column, the marginal effect of being hours constrained on later retirement probability is cut by a third to 5.2 percentage points - still a relatively large effect. And the effect remains very strongly statistically significant.

We are interested in hours constraint and retirement. Yet, the model in section 2 can be easily extended to show that facing hours constraints should raise the likelihood that worker switches his jobs. Appendix Table 1 presents results from a model restricted to persons working in both the first and third wave of the HRS. The outcome variable is a binary variable denoting whether the worker switches to a new employer between the first and third Waves. We find that for men, the effect is positive and statistically significant. For women, the effect is of the predicted sign but not significant.

Overall, the probit results confirm the simple difference estimates for both men and women, as relatively large increases in retirement probability are found for being hours constrained once observabales are controlled for. For both men and women, the results suggest that some of the hours constrained effect is attributable to the fact that certain types of jobs, such as unionized jobs, tend to have hours constaints and also tend to be jobs from which people retire relatively sooner. However, for both sexes, but especially for men, the results indicate an increased likelihood of retirement attributable purely

to the presence of constraints.

5.3 Robustness Tests and Alternative Specifications

In this section we re-estimate versions of the model above to assess whether sorting or measurement error account for the results. We describe in turn the two potential problems and the associated robustness tests we perform.

In the absence of an experimental design which randomly assigns people to jobs with and without hours constraints, there is no way to be sure that the strong effects found in the difference and probit models above are not attributable to differences in unobservable traits between the constrained and non-constrained workers. In particular, it is possible that workers with strong latent retirement propensities may have sorted into hours constrained jobs. If so, it would be their unobserved desire to be retired and not the hours constraints which account for the retirement effects documented above. The fact that there are few differences, on average, between the two types of workers in any of the demographic variables and job-related variables expect union status and education suggests that differences in unobservables is not driving the results, but there is no way to be absolutely certain about this.[6]

We conduct a simple test to assess the possible importance of this sorting. The logic of the test is straightforward. Worker probably sort into jobs throughout their life cycles, and for a variety of reasons, the importance of any particular reason varying over their life-cycles. In particular, when sorting occurs for reasons having to do with retirement, we would expect it to occur relatively late in the life-cycle. Thus, among a group of older workers in 1992, those who sorted into their jobs *for reasons having to do with retirement* should have relatively short job tenures as of 1992. Workers with

[6]The regression above control for union status and education, the only observable traits for which there is an difference between the two types of workers. We also estimated the models in the previous section separately by union status. The results, for both union and non-union workers, are qualitatively identical to the results already shown.

long job tenures in 1992 may well have sorted into those jobs, but it is unlikely that they did so with an eye to whether they would want to retire early 15 or 20 years in the future. We thus assess whether the effects documented above for being hours constraints are found among workers whose job tenure when observed in 1992 is large.

Our second robustness test assesses the extent to which measurement error in the hours constraint variable may be driving the results. Classical measurement error, in which the measurement error is uncorrelated with the unobserved retirement propensity, would have the effect of attenuating any estimated effects of retirement, thereby making the strong positive results shown above more convincing. But, recent work has emphasized that measurement error is unlikely to be classical when the mis-measured variable is binary, as is true in this case.[7] More importantly, regression estimates can be biased when there is type of mean-reverting error. The regressions presented earlier used only the single hours constraint report from Wave 1. One simple way of correcting for possible measurement error in this report is to use information from some other year. The alternative specification relates hours constraint reports from both the Wave 1 and Wave 2 surveys to retirement status by Wave 3. Because this test examines workers who were employed in both Waves 1 and 2, the sample is different from that used in regressions above, which was restricted to persons employed in Wave 1.

The three panels of Table 5 present the results of regressions in which we re-estimate the probit models depicted in the last columns of Tables 4a and 4b on three different samples. In panel A, the regression is performed on a sample of workers who, of the first time they are observed in Wave 1, had worked with their employer for 5 or more years. Apart from summary statistics about the regression, only the estimated probit coefficient, standard error and the marginal effect the binary "hours constrained in

[7]See Kane, Rouse and Staiger (1999)

1992" variable are presented. The table indicates that the estimated effect of hours constraints on later retirement probability for women in this sample is positive, but not statistically significant. For men, by contrast, the effect is positive and very strongly statistically significant. In fact, the estimated marginal effect of a 7.5 percentage point increase in the probability of retirement is larger than the estimated marginal effect from the model in Table 4b with all of controls.

Panel B of the table restricts the sample to persons who had been with the Wave 1 employer for at least 15 years when first observed. This is the sample for which the incidence of sorting of the type described above should be very low. Now, the estimated effect of being hours constrained on women's later retirement probability is positive and very close to significant. For men, the result is again very positive and strongly significant. Neither of these test completely rules out the possibility of sorting as an explanation for the results in the previous section, but the strong results in samples where sorting is unlikely to be a large consideration suggests a true causal role for hours constraints, especially for men.

Panel C presents results for a sample restricted to persons who are employed in both the first (1992) and second (1994) Waves. The regression contains all of the demographic and job related controls shown above. However, rather than the single hours costraint report, the regression has three measures: whether the person reports being constrained in both 1992 and 1994; and whether he reports being constrained in one of these years but not the other. The excluded category is when the person reports being hours constrained in neither period. The results strongly suggest that, at least for men, measurement error is not driving the results. We find that relative to not reporting a constraint in either period, men who report being constrained in both 1992 and 1994 are 12 percentage points more likely to retire. This effect is very strongly significant. The other two categories, which constitute 9% of persons who

ever report being constrained, both have estimated effects which are much smaller and not statistically significant. The results show rather convincingly that measurement error in hours constraints does not account for the results documented in the paper.

6 Conclusion

In this paper, we examine how facing hours constraints at the job affects mature workers' subsequent retirement probabilities. This subject has received very little previous attention in the literature, despite evidence that restrictions on hours of work are a prevalent feature of the labor market, and work which shows that the presence of these constraints makes it difficult for other kinds of workers to satisfy changing labor supply preferences without changing jobs.

Using multiple waves of data from the Health and Retirement Study, and employing a series of empirical tests, we find that hours-constrained mature workers, and especially men, are much more likely to retire by some future date than are workers who are free to adjust their hours of work. The results are robust to a series of alternative specifications, suggesting that they are not attributable to unobserved job or worker characteristics. The amount by which facing hours constraints is estimated to raise the likelihood of retirement is almost as large as the effect for being in poor health, so the effects we document are economically quite significant.

It is known that many workers, prior to the time they completely withdraw from the labor force, "partially retire" - move to jobs at which they work substantially fewer hours. Hours constraints on career jobs may account for these patterns. We show that they also push some mature workers out of the labor force entirely, probably because the transition costs of moving to new jobs are high. It is tempting to argue that the presence of hours constraints imposes an efficiency loss on the economy, insofar as they induce people who are willing to work some positive amount to instead stop working

completely. But, this claim might be invalid as the paper is silent on the question of *why* hours constraints exist in the labor market in the first place. Future research will hopefully address this question.

Bibliography

Altonji, Joseph G and Christina H. Paxson, "Labor Supply Preferences, Hours Constraints and Hours-Wage Tradeoffs", *Journal of Labor Economics*, 1988, 6(2), 254-27.

Altonji, Joseph G and Christina H. Paxson, "Labor Hours Constraints and Mobility", *Journal of Human Resources*, 1992, 27(2), 256-278

Ball, Laurence, "Intertemporal Substitution and Constraints on Labor Supply: Evidence From Panel Data", *Economic Inquiry*, 1990, 28, 706-724.

Biddle, Jeff E and Gary A. Zarkin, "Choice Among Wage-Hours Packages: An Empirical Investigation of Labor Supply," *Journal of Labor Economics*, 1989, 7(4), 414-37.

Chamberlain, Gary, "Multivariate Regression Models for Panel Data", *Journal of Econometrics*, 1982, 18(1), 5-46.

Deaton, Angus and Muellbauer, "Functional Forms for Labor Supply and Commodity Demand with and without Quantity Rationing," *Econometrica*, 1981, 49, 1521-1532.

Dickens , William T and Shelly Lundberg, "Hours Restrictions and Labor Supply," *International Economic Review*, 1993, 34(1), 169-192.

Fields, Gary S. and Olivia S. Mitchell, "Economic Determinants of the Optimal Retirement Age: An Empirical Investigation," *Journal-of-Human-Resources*, 1984, 19 (2), 245-262.

Gustman, Alan and Thomas L Steinmeier, "Partial Retirement and the Analysis of Retirement Behavior," *Industrial and Labor Relations Review*, 1984, 37, 403-415.

Gustman, Alan and Thomas L Steinmeier, "Minimum Hours Constraints and Retirement Behavior," *Contemporary Policy Issues*, a supplement to *Economic Inquiry*, 3, 77-91.

Ham, John "Estimation of a Labor Supply Model with Censoring Due to Unemployment and Underemployment", *The Review of Economic Studies*,1982, 49, 335-354.

Kane, Thomas, Cecilia Elena Rouse, and Douglas Staiger "Estimating Returns to Schooling When Schooling is Misreported" *National Bureau of Economic Research Working Paper* #7235, July 1999.

Kahn, Shulamit and Kevin Lang "The Effect of Hours Constraints on Labor Supply Estimates," *The Review of Economics and Statistics*, 1991, 34(1), 605-611.

Ruhm, Chris "Bridge Jobs and Partial Retirement" *Journal of Labor Economics*, October 1990, 8(4), 482-501.

Table 1. Means and Standard Deviations of Selected Variables

	Women	Men
Characteristic in 1992		
Age	57.8	58.3
	(2.08)	(2.5)
Married or Spouse Present	0.62	0.86
	(0.49)	(0.34)
White	0.77	0.82
	(0.42)	(0.38)
Years of Schooling >12	0.36	0.38
	(0.47)	(0.48)
Years of Schooling < 12	0.26	0.29
	(0.44)	(0.45)
Health "Excellent"	0.24	0.24
	(0.43)	(0.42)
Health "Fair"	0.12	0.11
	(0.33)	(0.31)
Health "Poor"	0.02	0.03
	(0.14)	(0.16)
Union Member	0.24	0.32
	(0.43)	(0.47)
Job Tenure in 1991	15.65	20.95
	(11.72)	(13.02)
log (Hourly Wage)	2.22	2.59
	(0.56)	(0.6)

Data are from Multiple Waves of the Health and Retirement Study. See text for details.

Table 2a. Fraction of Working Women in 1992 Retired by 1996, by Able to Lower Usual Hours in 1992 (Standard Errors in Parentheses)

	Fraction Retired in 1996		
	Free to Lower Hours in 1992	Cannot Lower Hours in 1992	Difference in Fraction Retired
Overall	0.195 (0.022)	0.259 (0.015)	-0.064 (0.027)
Age in 1992			
55	0.019 (0.019)	0.109 (0.026)	-0.09 (0.032)
56	0.092 (0.036)	0.136 (0.031)	-0.044 (0.048)
57	0.063 (0.035)	0.138 (0.030)	-0.075 (0.046)
58	0.174 (0.057)	0.285 (0.041)	-0.111 (0.07)
59	0.371 (0.083)	0.366 (0.048)	0.005 (0.096)
60	0.371 (0.083)	0.407 (0.053)	-0.036 (0.098)
61	0.500 (0.100)	0.506 (0.056)	-0.006 (0.115)
62	0.400 (0.245)	0.571 (0.111)	-0.171 (0.269)
63	1.000 (0.000)	0.000 (0.000)	1.000 (0.000)
64	0.000 (.)	. (.)	. (.)

Data are from multiple waves of the Health and Retirement Study. See text for explanations.

Table 2b. Fraction of Working Men in 1992 Retired by 1996, by Whether Able to Lower Usual Hours in 1992 (Standard Errors in Parentheses)

	Fraction Retired in 1996		
	Free to Lower Hours in 1992	Cannot Lower Hours in 1992	Difference in Fraction Retired
Overall	0.274 (0.025)	0.347 (0.015)	-0.073 (0.029)
Age in 1992			
55	0.077 (0.037)	0.123 (0.027)	-0.046 (0.046)
56	0.071 (0.040)	0.166 (0.030)	-0.095 (0.050)
57	0.156 (0.055)	0.220 (0.035)	-0.064 (0.065)
58	0.184 (0.064)	0.264 (0.039)	-0.08 (0.075)
59	0.333 (0.088)	0.422 (0.046)	-0.089 (0.099)
60	0.325 (0.075)	0.573 (0.047)	-0.248 (0.089)
61	0.438 (0.089)	0.656 (0.049)	-0.218 (0.102)
62	0.615 (0.097)	0.688 (0.068)	-0.073 (0.118)
63	0.727 (0.141)	0.538 (0.100)	0.189 (0.173)
64	0.667 (0.142)	0.737 (0.104)	-0.07 (0.176)

Data are from multiple waves of the Health and Retirement Study. See text for explanations.

Table 3. Means and Standard Errors Key Variables, by Sex and By Whether Able to Lower Hours in 1992

	Women				Men			
	Constrained		Un-Constrained		Constrained		Un-Constrained	
	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
Demographics								
Age	**57.73**	0.10	**57.78**	0.06	**58.55**	0.12	**58.18**	0.07
White?	**0.80**	0.02	**0.76**	0.01	**0.85**	0.02	**0.82**	0.01
Married?	**0.62**	0.02	**0.62**	0.02	**0.87**	0.02	**0.86**	0.01
Health "Excellent"	**0.25**	0.02	**0.24**	0.01	**0.26**	0.02	**0.23**	0.01
Health "Fair"	**0.12**	0.02	**0.13**	0.01	**0.10**	0.01	**0.10**	0.01
Health "Poor"	**0.02**	0.01	**0.02**	0.00	**0.03**	0.01	**0.03**	0.00
More than 12 years School	**0.34**	0.02	**0.37**	0.02	**0.46**	0.02	**0.34**	0.01
Less than 12 years School	**0.26**	0.02	**0.25**	0.01	**0.24**	0.02	**0.30**	0.01
Job Characteristics								
Union Member?	**0.17**	0.02	**0.27**	0.01	**0.17**	0.02	**0.37**	0.01
Job Tenure in 1992	**15.12**	0.63	**15.84**	0.35	**20.90**	0.66	**21.03**	0.36
Log Hourly Wage	**2.10**	0.03	**2.27**	0.02	**2.61**	0.03	**2.58**	0.02

Data are from Health and Retirement Study. See text for details.

Table 4a. Probit Estimates of Effcet of Hours Constraints on Job Held in 1992 on Retirement Probability of Women in 1996. Probit Coefficient, Standard Error in Parentheses, and Associated Mean Marginal Effect in Squared Brackets.

	(I)	(II)	(III)
Characteristic in 1992			
White	-0.055	-0.054	-0.015
	(0.109)	(0.11)	(0.11)
	[-0.015]	[-0.015]	[-0.004]
Married	0.231	0.23	0.258
	(0.092)	(0.093)	(0.095)
	[0.062]	[0.062]	[0.067]
Less than 12 Years Schooling	-0.028	-0.038	-0.057
	(0.115)	(0.115)	(0.123)
	[-0.007]	[-0.01]	[-0.015]
More than 12 Years Schooling	0.114	0.11	-0.19
	(0.101)	(0.101)	(0.11)
	[0.031]	[0.029]	[-0.005]
Health "Excellent"	-0.192	-0.192	-0.228
	(0.114)	(0.114)	(0.117)
	[-0.05]	[-0.05]	[-0.058]
Health "Very Good"	-0.118	-0.126	-0.122
	(0.105)	(0.106)	(0.108)
	[-0.032]	[-0.033]	[-0.032]
Age	0.243	0.24	0.253
	(0.021)	(0.021)	(0.022)
	[0.066]	[0.066]	[0.067]
Controls for Wave 1 Hours of Work	Yes	Yes	Yes
Cannot Lower Hours at Job		**0.226**	**0.132**
		(0.102)	**(0.1)**
		[0.059]	**[0.034]**
Union Member			0.193
			(0.108)
			[0.053]
ln(Hourly Wage)			0.238
			(0.089)
			[0.063]
Industry and Occupation Dummies			Yes
Constant	-14.95	-15.15	-16.14
	(1.27)	(1.286)	(1.45)
n	1144	1134	1125
-2 * log liklelihood	1117.08.	1103.06	1068.12

Data are from Multiple Waves of the Health and Retirement Study. See text for details.

Table 4b. Probit Estimates of Effcet of Hours Constraints on Job Held in 1992 on Retirement Probability of Women in 1996. Probit Coefficient, Standard Error in Parentheses, and Associated Mean Marginal Effect in Squared Brackets.

	(I)	(II)	(III)
Characteristic in 1992			
White	0.141	0.133	0.176
	(0.109)	(0.109)	(0.116)
	[0.043]	[0.039]	[0.048]
Married	-0.057	-0.085	-0.114
	(0.115)	(0.117)	(0.124)
	[-0.018]	[-0.026]	[-0.033]
Less than 12 Years Schooling	-0.102	-0.115	0.06
	(0.100)	(0.100)	(0.11)
	[-0.031]	[-0.034]	[0.017]
More than 12 Years Schooling	0.018	0.026	-0.024
	(0.091)	(0.091)	(0.103)
	[0.005]	[0.008]	[-0.006]
Health "Excellent"	-0.15	-0.115	-0.154
	(0.1)	(0.1)	(0.11)
	[-0.046]	[-0.034]	[-0.043]
Health "Very Good"	-0.031	-0.017	-0.043
	(0.089)	(0.089)	(0.093)
	[-0.01]	[-0.005]	[-0.012]
Age	0.229	0.237	0.26
	(0.016)	(0.016)	(0.017)
	[0.07]	[0.07]	[0.074]
Controls for Wave 1 Hours of Work	Yes	Yes	Yes
Cannot Lower Hours at Job		**0.304**	**0.198**
		(0.094)	**(0.1)**
		[0.089]	**[0.052]**
Union Member			0.369
			(0.09)
			[0.109]
ln(Hourly Wage)			0.334
			(0.083)
			(0.095)
Industry and Occupation Dummies			Yes
Constant	-13.76	-14.34	-16.67
	(0.98)	(1.01)	(1.14)
n	1340	1324	1311
-2 * log liklelihood	1451.94	1425.2	1326.22

Data are from Multiple Waves of the Health and Retirement Study. See text for details.

Table 5. Probit Estimates of Effect of Hours Constraints on Whether Retired in 1996 for Alternative Samples. Table Presents Probit Coefficient, Standard Error in Parentheses, and Mean Marginal in Brackets of Estimated Effect of Hours Other Controls in Regressions are Identical to those in Last Columns of Table 4.

	Women	Men
A. Persons with at least 5 Years Tenure in 1992		
Dummy: "Cannot Reduce Hours at Job"	0.169	0.262
	(0.124)	(0.11)
	[0.03]	[0.075]
n	871	1133
-2 * Log Likelihood	855.52	1171.24
B. Persons with at least 15 Years Tenure in 1992		
Dummy: "Cannot Reduce Hours at Job"	0.21	0.364
	(0.138)	(0.126)
	[0.03]	[0.11]
n	697	849
-2 * Log Likelihood	711.54	903.58
C. Person Employed in 1992 and 1994		
Dummy: "Cannot Reduce Hours in Both 1992 and 1994"	0.002	0.517
	(0.17)	(0.18)
	[0.01]	[0.126]
Dummy: "Cannot Reduce Hours in Only 1992"	0.002	0.303
	(0.14)	(0.22)
	[0.02]	[0.08]
Dummy: "Cannot Reduce Hours in Only 1994"	-0.002	0.279
	(0.128)	(0.22)
	[-0.02]	[0.06]
n	806	891
-2 * Log Likelihood	639.26	824.8

Data are from Multiple Waves of the Health and Retirement Study. See text for details.

Appendix Table 1. Probit Estimates of Effect of Hours Constraints on Job Held in 1992 on **Whether Worker Moves to a New Job by 1996**, Among Workers Who Do Not Retire by 1996. Probit Coefficient, Standard Error in Parentheses, and Associated Mean Marginal Effect in Squared Brackets.

	Women	Men
Characteristic in 1992		
White	-0.337	0.235
	(0.157)	(0.192)
	[-0.055]	[0.029]
Married	0.055	-0.273
	(0.132)	(0.176)
	[0.008]	[-0.043]
Less than 12 Years Schooling	-0.341	-0.254
	(0.171)	(0.178)
	[-0.045]	[-0.032]
More than 12 Years Schooling	-0.189	0.023
	(0.154)	(0.157)
	[-0.026]	[0.003]
Health "Excellent"	0.176	0.176
	(0.169)	(0.171)
	[0.027]	[0.025]
Health "Very Good"	0.3	0.255
	(0.154)	(0.153)
	[0.047]	[0.036]
Age	0.012	-0.012
	(0.033)	(0.029)
	[0.002]	[-0.002]
Cannot Lower Hours at Job	**0.078**	**0.24**
	(0.142)	**(0.14)**
	[0.011]	**[0.026]**
Union Member	-0.542	-0.446
	(0.214)	(0.177)
	[-0.062]	[-0.062]
ln(Hourly Wage)	-0.325	-0.299
	(0.132)	(0.12)
	[-0.048]	[-0.04]
Industry and Occupation Dummies	Yes	Yes
Controls for Wave 1 Hours of Work	Yes	Yes
Constant	-0.812	0.234
	(1.96)	(1.79)
n	860	883
-2 * log liklelihood	468.84	451.5

Data are from Multiple Waves of the Health and Retirement Study. See text for details.

Figure 1: Distribution of Hours of Work and Incidence of Hours Constraints, by Sex. Data from Health and Retirement Study.



