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Fixed Costs and Hours Constraints

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Abstract: Fixed costs of employment like certain fringe benefits drive a wedge between average hourly earnings and the marginal product of additional hours and are known theoretically to lead workers to report constraints on work hours. This paper shows that the cross-section pattern of reported hours constraints is consistent with this wedge model augmented by imperfect matching. Observed changes over time in a worker's hours are also consistent with this model and imply that constraints due to fixed costs like fringe benefits are "illusory" in the sense that the jobs constrained workers prefer are economically infeasible.

JEL Codes: J0, J22, J32

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The standard neoclassical theory of labor supply assumes that a worker can choose his preferred hours of work at a constant rate of pay per hour either directly by choosing his hours within a job or indirectly by choosing a job that requires the preferred hours. The usual response to a student who notes that most jobs do not allow much choice of hours is to argue that even if jobs allow no choice of hours, workers can in effect choose their hours by choosing their job. In this market equilibrium, every worker will be working as much as he wants even though not every job allows the worker to choose his hours.

However, about a third of all U.S. workers say they would like to work either more hours or fewer hours than they currently work at the same hourly rate of pay, an observation that appears to be inconsistent with the frictionless labor market described above. Hours constraints can arise either because the preferred job is offered but market frictions like search costs keep workers from finding it or because the preferred job is not offered by the market.¹ Preferred jobs will not be offered by the market if they are economically infeasible (resulting in a loss for employers), illegal, or not rent-maximizing for employers with monopsony power or unions with monopoly power. Workers might imagine that infeasible jobs are possible and consider themselves constrained if they cannot attain them. As I show below in greater detail, this could occur if there is a “wedge” between the average and marginal product of work hours, caused by fixed costs of employment such as setup costs, training costs or fringe benefits whose cost is not proportional to hours worked (Hamermesh (1993)). A legal restriction like

¹ A variant of the search cost hypothesis is “thin markets”. Complementarities between worker hours at the same employer might lead employers to require uniform hours within a firm or establishment. If the number of firms in a labor market is small, workers may not be able to find an employer offering jobs with their preferred hours. This suggests that more workers would report being constrained in small labor markets than big ones with more choice. In the data, however, the opposite is true.

mandatory overtime premia might also cause hours constraints if the preferred job is economically feasible but illegal (Ehrenberg (1971)).

To motivate the empirical work, the paper sketches a model which includes the “wedge” explanation, search frictions, and overtime premia. The model makes two strong empirical predictions. First, it predicts that, compared to workers in jobs without fringes, workers in jobs with fringe benefits whose cost is not proportional to hours worked (fixed-cost fringe benefits) will be more likely to want to work less and less likely to want to work more, *holding constant their actual number of hours*. Second, it predicts that when comparing a worker’s hours at two points in time, workers who initially want to work more will increase their hours, workers who want to work less will decrease their hours, *but the effect of wanting to work less on subsequent hours reductions will be much smaller for workers with fixed-cost fringe benefits*. Both of these predictions are strongly confirmed by data on self-reported hours constraints from the Current Population Survey (CPS).

I. Background

Employers typically do not give workers much discretion to choose hours of work; instead, employers offer “jobs” which are tied packages of earnings, hours and fringe benefits, which can either be accepted or rejected. Of course, workers can choose among jobs and in that way choose hours², so the fact that some workers say they would like to work more or less is still a puzzle to explain. Why don’t workers find jobs which match their preferences?

² See Blundell, Brewer and Francesconi (2008) for empirical evidence in support of this model.

For the most part, the existing empirical literature on hours constraints in labor supply focuses not on the causes of these constraints but on issues such as the effect of hours constraints on labor supply estimates (Kahn and Lang (1991)) and the extent to which hours are constrained (Dickens and Lundberg (1993) and Stewart and Swaffield (1997)). Altonji and Paxson (1988, 1992) show that workers seek to bring their actual hours closer to their preferred hours when they change jobs. Bloemen (2008) builds a model in which workers search along two dimensions, wages and required hours, but the distribution of jobs and their hours requirements is taken as exogenous in his model. Cutler and Madrian (1998) point to evidence that rising health insurance costs have led to increased hours of work per worker as employers seek to cover increased fixed costs of employment. However, their empirical study does not directly observe evidence on hours constraints but only hours of work.

Most relevant to this paper is a series of papers by Kahn and Lang (1995, 1996, 2001) which test alternative models of hours constraints. Their 1996 paper examines a version of the wedge model (their “hedonic” model), noting that hours constraints arise when the marginal wage differs from the average wage. Workers choose labor supply by equating the marginal value of leisure to the marginal wage. If asked about working any number of hours at the average wage of their current job, they would choose more hours if the average wage exceeds the marginal wage and would choose fewer hours if the average wage is less than the marginal wage. Kahn and Lang find that the pattern of reported hours constraints is consistent with the shape of the wage-hours locus they estimate at least under certain specifications, but, as they note, it is difficult to identify a locus of wages and hours available to a single worker from data on hours and earnings

across workers. In later work, Lang and Kahn (2001) conclude that hours constraints are best explained by a “matching model in which wages depend on hours as in hedonic models, but in which the matching is imperfect.”

Like Kahn and Lang, this paper focuses on situations in which earnings are not proportional to hours (and hence the average wage does not equal the marginal wage) in the context of costly worker search. The paper brings two new elements to bear on the analysis. First, I use observable determinants of the wage-hours locus, namely fringe benefits, to explain why some workers are more likely to report being constrained. In particular, I show both theoretically and empirically that comparing workers with the same actual hours, those with fringe benefits are more likely to report wanting to work less. Second, I follow workers over time and show that while constrained workers tend to find better matches over time, as a matching model would predict, constrained workers with fringe benefits are less likely to do so, because as the hedonic or wedge model makes clear, their current jobs are more likely to be the best feasible jobs for them. In that sense, the hours constraints they report are “illusory”.

In the data I use, more workers report wanting to work more than report wanting to work less.³ However, the novel results of the paper involve those who want to work less because the important observable variables I use to control for the shape of the wage-hours locus (namely fringe benefits) imply that marginal wages exceed average wages, so that workers want to work less at their average wage. I do include one explanation for wanting to work more (a proxy for overtime premia) but explaining why some workers want more hours is not the central focus of this paper.

³ Lang and Kahn (2001) show that in some surveys wanting to work less is the more popular choice, especially in Europe.

II. Hours Constraints: Theory

This section describes a simple model of hours constraints to motivate the empirical work which seeks to explain why some workers report hours constraints. Attention is focused on three underlying causes: search frictions and “wedges” caused by fixed-cost fringe benefits and by legally mandated overtime wage premia. I do not include two additional causes of constraints, market power or implicit contracts. Monopsony power of employers or monopoly power of labor unions might lead to hours constraints as the agent with market power will not be indifferent about total hours of labor at a given wage rate. Monopsonists can do better if they can push workers off their labor supply curves and monopoly unions will want to curb their members’ desire to work more at the union wage.⁴ Implicit contract models are alternatives to continuously clearing spot labor markets, breaking the link between the current wage and hours of work. In risk-sharing implicit contract models, hours are determined efficiently by equating the value of marginal product with the marginal opportunity cost of labor, but wages are determined by long-run risk-sharing criteria. Hence, as the value of marginal product varies over the business cycle, the contract, which is efficient in the long run, will require workers to work hours they would not choose to work at the wage they are paid. (Beaudry and di Nardo (1995) and Ham and Reilly (2002).) Khan and Lang (1992) reject the implicit contract explanation empirically.

⁴ There is some evidence in the data used here that union workers are more likely to want to work more, which is the prediction of this model. There is no evidence that workers at firms with more monopsony power want to work less, but it is difficult to obtain credible empirical measures of monopsony power.

Wedges

Wedges arise when feasible monetary compensation (earnings) as a function of hours diverges from the compensation workers are asked to consider when they are asked about hours constraints. When workers are asked whether they would like to work more or fewer hours at the same rate of pay, they envision being able to choose any number of hours at their current average hourly earnings. If feasible monetary compensation is not proportional to hours, such choices may not be feasible. Feasible monetary compensation will not be proportional to hours when there are fixed costs of employment (fixed-cost fringe benefits or set-up costs) or variations in the productivity of hours worked (such as fatigue effects). Because fixed-cost fringe benefits can be observed in the data, I focus on them as a source of wedges. If an employer pays for health insurance for his employees, he cannot also offer a wage equal to the worker's average product and cover his costs. A zero profit pay schedule would require average wage rates that vary with hours and might also impose minimum hours to avoid wages below the legal minimum. What is crucial is that in the economically feasible set of jobs, earnings are not proportional to hours worked.

Sometimes wedges are imposed by legal restrictions. In the case of legally mandated overtime premia, economically feasible compensation may be proportional to hours but legal compensation will not be. Workers envision being able to choose alternative hours along the legally mandated schedule of hours and compensation and may well want to choose infeasible combinations which the employer will not allow.

To illustrate more concretely, suppose firms compete for equally productive workers in a competitive labor market by offering "jobs" which can be characterized as a

vector of monetary compensation or consumption (C), weekly hours (\hat{h}), and weekly fringe benefits (F). To motivate why firms rather than workers are buying the fringes, one can invoke tax considerations or adverse selection in the insurance market. For our purposes, we simply stipulate that only firms can buy fringe benefits. Each hour of the worker's labor is assumed to be worth v to each firm so marginal product is independent of hours worked.

A firm that offers job j , (C_j, \hat{h}_j, F_j) , and successfully employs a worker at that job, will earn profits, π_j , where

$$\pi_j = v \cdot \hat{h}_j - F_j - C_j \quad (1)$$

The profit a firm earns from hiring a worker is just the difference between the worker's value of output, $v \cdot \hat{h}_j$, and the wage and fringe cost of employing him. In Figure 1, line FDA, with slope v , illustrates all the zero-profit jobs that could be offered with fringe benefits equal to F .

Workers evaluate jobs according to their preferences for consumption, leisure (non-work time) and the fringe benefit. Equilibrium in the labor market is characterized by an assignment of workers to jobs, a zero-profit condition for firms, and, for workers, the existence of no superior job choice. This is a pure compensating differential equilibrium. By the firm zero-profit condition, jobs with many fringe benefits must have either lower monetary compensation per hour or greater required hours. The problem is formally equivalent to workers selecting F and h to maximize their utility subject to the constraint that the value of output produced by the worker equals the cost of fringes and earnings.

In equilibrium, therefore, if workers can costlessly search among jobs, each job j observed must be the solution to some worker i 's maximization problem:

$$\max_{\{F_j, h_j\}} U^i(v \cdot h_j - F_j, T - h_j, F_j) \quad (2)$$

Here T represents total time to be allocated between leisure and work. The pattern of jobs observed in the market will, of course, depend on the pattern of preferences for fringe benefits and leisure among workers.⁵ In figure 1, point G represents the preferred job for the preferences illustrated.

To illustrate with a specific functional form, suppose worker utility is log linear in consumption, leisure and fringes: $(vh - F)^a \cdot (T - h)^{1-a} \cdot F^b$, where $0 < a < 1, 0 \leq b < 1$.

The two preference parameters are a , the relative weight on consumption in the consumption-leisure subutility function, and b , the weight on fringes. The optimal

choices of h and F are $\left(\frac{a+b}{1+b}\right)T$ and $\left(\frac{b}{1+b}\right)vT$, respectively. With those choices, a

worker's consumption will be $\left(\frac{a}{1+b}\right)vT$. Average hourly earnings is consumption

divided by hours, or $\frac{av}{(a+b)}$. The job j chosen by a worker with preference parameters

a and b and productivity v will therefore be characterized by:

⁵ Production complementarities among workers at the same firm would limit the variety of jobs a single firm might offer, as would U.S. tax law which limits the variation across workers within a firm in the amount of tax-exempt fringe benefits. These phenomena might lead to hours constraints if labor markets are thin. As noted above, however, empirically workers in "thick" markets are more likely than workers in "thin" markets to report being constrained.

$$\begin{aligned}
\hat{h}_j &= \left(\frac{a+b}{1+b} \right) T \\
F_j &= \left(\frac{b}{1+b} \right) vT \\
C_j &= \left(\frac{a}{1+b} \right) vT
\end{aligned} \tag{3}$$

Now suppose the worker who has chosen his most preferred feasible job as characterized by (3) is asked whether he wants to work more or less at the same rate of pay. It is reasonable to think that in answering this question the worker envisions alternative jobs with the same fringe benefits, F_j , but a choice of hours implying consumption equal to hours times his current average hourly earnings. In Figure 1, the worker at point G envisions job possibilities along segment OG, where the slope of OG is his current average hourly earnings. Using our specific functional form, the worker envisions the following problem:

$$\max_{\{h\}} \left[\frac{avh}{a+b} \right]^a \cdot (T-h)^{1-a} \cdot F_j^b \tag{4}$$

Here the only choice variable is h and consumption is thought by the worker to be average hourly earnings, $av/(a+b)$, times hours. Fringes are fixed at F_j . The solution to this problem is desired hours $h^* = aT$. As long as fringes are positive ($b > 0$), the jobs along OG are not feasible because the firm makes negative profits in that region. Hence the job along OG with the consumption and hours the worker would like cannot be offered by employers.

The gap between actual and desired hours, $\hat{h} - h^*$, is given by:

$$\hat{h} - h^* = \left(\frac{a+b}{1+b} \right) T - aT = \left(\frac{b}{1+b} \right) \cdot (1-a)T \quad (5)$$

If fringe benefits have no value to the worker, $b = 0$, $F_j = 0$ and there are no hours constraints. Graphically, lines FA and line OG coincide. Hours constraints are increasing in both the utility weight on fringes, b , and the utility weight on leisure, $1-a$. Graphically, the wedge is the difference between the slopes of OG and FA, which depends on the size of F .

To express the gap between actual and desired hours as a function of observables, substitute for F_j

$$\hat{h} - h^* = (1-a)(F_j / v) \quad (6)$$

This suggests that cross section variation in hours constraints will be a positive function of observed fringes and a negative function of hourly productivity, with additional variation introduced by the preference term $1-a$.

Search Frictions

Now consider search frictions. Bloemen (2008) shows that when workers care about both wage rates and required hours, their optimal search strategy is to set a reservation utility level and accept any job which meets it. For simplicity, I assume that the frictions result in workers accepting jobs with their desired fringes but with required hours on the job that may vary from their preferences. All jobs are still assumed to generate zero profits for firms. Let ε denote the noise in hours

$$\hat{h} = \left(\frac{a+b}{1+b} \right) T + \varepsilon \quad (7)$$

Since fringe benefits are at their desired value, $\left(\frac{b}{1+b} \right) vT$, and jobs follow the zero profit constraint, consumption equals $\left(\frac{a}{1+b} \right) vT + \varepsilon v$.

If we now rerun the thought experiment of asking the worker whether he would like to work more or less at the same rate of pay, we again assume that the worker assumes that fringe benefits are held constant and desired hours are again $h^* = aT$. The gap between actual and desired hours is now

$$\hat{h} - h^* = \left(\frac{b}{1+b} \right) (1-a)T + \varepsilon \quad (8)$$

The noise is just added to the previous gap. Writing the gap as a function of observables, we have

$$\hat{h} - h^* = (1-a)(F_j / v) + \hat{h} - \left(\frac{a+b}{1+b} \right) T \quad (9)$$

implying that the gap is increasing in fringes and actual hours, \hat{h} , decreasing in worker productivity, v , with additional variation implied by differences in the taste parameters, a and b . We can attempt to control for differences in productivity and tastes with other observables, but this equation predicts that workers who choose jobs with more fringe benefits will report a greater gap between actual and desired wages, even holding constant their actual hours, \hat{h} . As (9) is written, allowing both a and b to vary across workers implies that the coefficient on fringes will vary across workers and will be

correlated with the unobservable term $\left(\frac{a+b}{1+b}\right)T$. However, if we restrict the variation in tastes across workers to variation only in the utility weight on fringes, b , holding a constant, the coefficient on F will be the same for each worker and the additive unobservable term $\left(\frac{a+b}{1+b}\right)T$ will capture all the taste variation.

Overtime Premia

Legally mandated overtime premia can also give rise to hours constraints. To simplify, assume that fringes are zero and that worker value to the firm is again a constant v per hour so that the competitive wage, before the imposition of overtime premia, equals v . Firms have no interest in constraining hours. When overtime premia are imposed on weekly hours above 40, a naïve approach assumes that the straight-time wage continues to equal v . Now firms will constrain hours to be less than 40, to avoid paying more for hours than they are worth to the firm. (See Ehrenberg (1971)). Figure 2 shows the set of feasible jobs as the line ODB with slope v . In the absence of an overtime premium, a worker chooses point C and works more than 40 hours. With an overtime premium and the naïve assumption that the straight-time wage stays at v , the constraint becomes ODE. Firms will constrain workers to jobs like D with 40 hours, when workers would prefer C. Note that this explanation does not require the worker to interpret a question about working more as implying that the overtime premium will be paid to him. The firm does not offer C because it cannot legally do so.

Trejo (1991) pointed out that assuming that the straight-time wage remains constant with an overtime premium is naïve; the firm could still offer the job initially

chosen by the worker at point C by a suitable adjustment of the straight-time wage rate. OFG represents a straight-time wage and overtime premium that allows the firm to offer job C, which the worker clearly prefers to the naïve constrained job, D. But at C, the worker may still feel constrained; he would like to work more hours at the overtime rate along CG. The firm won't offer a job on CG because any job above ODB is not economically feasible. Again, the hours constraint is caused by a wedge between the jobs that are feasible (ODB) and the worker's perceived constraint (OFG). Under either the naïve model or Trejo's model, workers covered by mandatory overtime premia should be more likely to report wanting to work more.

Empirical Implications

The wedge model implies that workers in jobs with fixed-cost fringe benefits will want to work fewer hours at their current average hourly earnings. Moreover, the greater the cost of fringe benefits, the greater the size of the gap between actual and desired hours, holding worker marginal product and preferences constant. Search costs imply that workers will take jobs which do not match their preferences exactly; hence, some will want to work more and others will want to work less. Other things equal, the more one must work at one's current job, the more likely one is to report wanting to work less and the less likely one is to want to work more. In the overtime model, the worker imagines being able to work more along the legally mandated menu of hours and compensation, earning incremental compensation that exceeds his incremental

value to the firm. Hence, workers eligible for legally mandated overtime will be more likely than other workers to want to work more than their current hours.

One set of empirical predictions concerns which workers will say they want to work more and which ones will want to work less. Equation (9) implies that, *comparing two workers with the same actual hours*, the worker with a job granting fixed-cost fringe benefits will be more likely to report wanting to work less. Search costs imply that some workers will want to work more and some less. And the interaction of search costs and wedges implies that workers with fringe benefits will not only be more likely to want to work less but they will be less likely to want to work more than workers without such fringe benefits. Finally, workers eligible for legally mandated overtime will be more likely to want to work more.

A second set of empirical predictions concern changes over time in hours. Search models predict that workers who initially say they would like to work less will be more likely subsequently to reduce their hours, while those who say they would like to work more will on average increase their hours. However, the wedge model predicts that the worker who wants to work less (like the person at job G in Figure 1 envisioning the array of jobs along OG) will not be able to find another job that offers his preferred hours at the wage he expects because that job is economically infeasible. One empirically testable implication is that the effect of wanting to work less on subsequent reductions in hours will be much less (ideally zero) for workers with fixed-cost fringe benefits than for workers without fringes. Preferred jobs with reduced hours are feasible for the latter group, as illustrated by the worker who because of search frictions lands in job L in Figure 1 who would prefer job E.

Changes in hours between two points in time will also be affected by purely random changes in jobs. Consider the extreme case in which workers are moved entirely randomly to feasible jobs. We can still predict patterns in the changes in hours based on the fact that jobs with fringe benefits will on average require more hours than jobs without fringe benefits. Because jobs cannot pay negative compensation, jobs with fringes must on average have longer hours than jobs without.⁶ Hence, workers initially in jobs with fringes will work more hours on average and will be more likely to reduce hours over time than workers initially in jobs without fringes. By a similar argument, workers in jobs with fringes at the end of the period will be more likely to have increased their hours during the period.

III. Empirical Tests

A. Data and Descriptive Statistics

Testing this model requires data on hours constraints. Fortunately, the May, 2001 Current Population Survey asked working respondents whether they would prefer to work more for more pay or work less for less pay. The answers to that question form the basis for the empirical work here. Since all the empirical work depends on this self-

⁶ Legal minimum wages would just reinforce this argument, which presumes that firms naively offer jobs without regard to worker preferences. However, unless the taste for fringes, b , in the parametric utility function) is strongly positively correlated with $1-a$, the preference parameter for leisure, workers who choose jobs with fringe benefits will want to work more hours on average than workers who choose jobs without fringe benefits. If firms offer jobs with an eye to likely worker preferences, on average, jobs with fringes will require more hours than jobs without fringes. Also, U.S. tax law allows firms to discriminate among employees in offering fringe benefits only on the basis of full-time, part-time status, so in many firms one qualifies for fringe benefits only if one works more than a certain number of hours a week, often 30-35. This suggests that workers with strong tastes for fringes and leisure may find it more difficult to find low-paying, short hours jobs with fringe benefits in “thin” labor markets. But as noted above, empirically, workers in “thin” labor markets report fewer, not more, constraints than in large ones.

reported constraint variable, it is worth making sure that survey responses are consistent with worker behavior. Table 1 confirms that those workers who said they wanted to work less were, in fact, observed, on average, subsequently reducing their hours, while those workers who said they wanted to work more were later observed increasing their hours on average.

To explore the empirical implications of the wedge model, we need measures of fringe benefits. The CPS asks workers whether the employer contributes to employee health insurance and whether the worker is covered by a pension plan on his job. The CPS then makes an imputation of the amount of the employer contribution to health insurance based on other information like the worker's industry. Since fringe benefit information is gathered only in the March CPS survey, to combine it with the hours constraint data from May requires merging and matching the participants in the March and May, 2001 surveys. Overtime premia are proxied by whether the worker is paid on an hourly basis since he is much more likely to be covered by mandatory overtime premia if he is paid hourly.⁷

The 2001 matched CPS sample is described in Table 2. All employed workers are included whether they are paid hourly or not. About a quarter of all workers say they would like to work more at the same wage while about 7% say they would like to work less, for an overall dissatisfaction rate of about a third.⁸ Males are more likely to want to work more than females are; females are more likely to want to work less. Whites are

⁷ Workers who are "exempt" from the overtime provisions of federal labor law (FLSA) must be salaried and must perform certain types of duties. It is difficult to determine exactly who is exempt in the CPS, but it is known that hourly employees cannot be exempt.

⁸ The U.S. entered an eight month recession beginning in March, 2001. This undoubtedly affects the number of people who say they want to work more.

more likely to want to work less than non-whites, as are those with high levels of schooling and those who are not paid hourly.

The fact that Table 2 reveals many more workers who want to work more hours than workers who want to work fewer hours may appear to be inconsistent with a model which attempts to explain why workers would say they want to work less. While the focus of the paper is on the fringe benefit-illusion story, the empirical work allows for additional causes of hours constraints such as search frictions and overtime premia. Data consistent with the fringe benefit-illusion story does not imply that other explanations of hours constraints are not valid or that they may well explain a greater incidence of hours constraints than the fringe-benefit illusion hypothesis. These are complementary explanations not substitutes.

B. Effects of Job and Worker Characteristics on Hours Constraints

In this section, I report probit estimates of the effect of job and worker characteristics on self-reported hours constraints. The wedge model predicts that workers with fringes will be more likely to want to work less and less likely to want to work more. Search costs imply that the more hours the worker currently works, the less likely he is to want to work more and the more likely he is to want to work less. And the overtime premium predicts that hourly paid workers, who are more likely to be covered by legal overtime premia, will be more likely to want to work more and less likely to want to work less.

Randomness in the empirical model arises from unobserved taste and productivity differences across individuals. It also could arise from variation in

individual-specific reporting threshold values. Suppose that a worker reports wanting to work less if the difference between actual hours and desired hours ($\hat{h} - h^*$) exceeds some threshold, η ; if the discrepancy is less than η it is too small to report. The values of η in the sample are assumed to be drawn from a normal probability distribution function $F(\eta)$. The probability that a randomly chosen member of the sample reports working too much is then $\Pr(\hat{h} - h^* > \eta) = 1 - F(\hat{h} - h^*)$. Hence with our proxies for the theoretical determinants of the divergence between actual and desired hours, we can test the implications of the alternative hypotheses with a standard probit model.

Table 3 report probits on wanting to work less. Column (1) looks at pension coverage and health insurance. Health insurance, which is more likely than pension coverage to be a true fixed-cost fringe benefit independent of hours worked, is strongly positively related to wanting work less. The effect of pension coverage is also positive, but is not significant. Controls for worker characteristics are intended to capture some of the variation in worker productivity (v) and the preference term $\left(\frac{a+b}{1+b}\right)T$ in equation (9).

Column (2) of Table 3 adds a dummy for being paid hourly, which is significantly negatively related to wanting to work less, as theory predicts. Column (3) adds the worker's actual hours as an explanatory variable. Actual hours are strongly positively related to wanting to work less, as simple search models would predict, but the health insurance variable continues to be significant. Thus, fringe benefits have an independent effect on the desire to work less; they are not just picking up the fact that jobs with fringes require more hours. This is a strong confirmation of the wedge model; holding actual hours constant, workers in jobs with fringes are more likely to want to work less

than workers in jobs without fringes. The estimated effects are not only statistically significant, they are of considerable magnitude. The estimates in column (3) of Table 3 imply that \$3000 worth of health insurance (the mean value of this variable for workers receiving health insurance) raises the probability that a worker will report wanting to work less by more than one percentage point (recall that only 7% of workers say they want to work less). Finally, column (4) adds industry and occupation dummies to the estimates. Since industry and occupation are correlated with some of the other explanatory variables, we expect and observe further muting of effects, but the fringe benefits, hourly pay, and actual hours variables are still significant.

Table 4 reports similar probits on wanting to work more. Here, both types of fringe benefits, pension coverage and health insurance, have significantly negative effects as theory predicts. Pensions as well as health insurance are strongly related to hours constraints. A worker with pension coverage is roughly 3% less likely to report wanting to work more. Being paid hourly is strongly associated with wanting to work more. And, as in Table 3, these results hold up even when I add actual hours (column (3)) and industry and occupation dummies (column (4)).

In order to use all the information available, Table 5 reports ordered probits on the three possible responses: wanting to work less, wanting to work the same, and wanting to work more. The results are similar to the previous probit estimates. Both types of fringe benefits are again strongly related to hours constraints in the expected direction, consistent with the wedge model. Being paid hourly, a proxy for being covered by mandatory overtime premia, is also strongly related to hours constraints in the expected

direction. And columns (3) and (4) show that these results hold up even when we control for actual hours and for industry and occupation.

Tables 3 to 5 show that the basic prediction of the wedge model is confirmed by the data. Workers in jobs with fixed-cost fringe benefits are more likely to want to work less (and less likely to want to work more), *even holding constant actual hours of work*. That result distinguishes the wedge model from plausible alternatives. For example, a search model combined with the fact that jobs with fringe benefits on average require more hours would predict that workers who land in jobs with fringes would be more likely to want to reduce their hours because those jobs on average require more hours. However, in that model, the effect of fringes should disappear when we control for actual hours. The fact that the effect of fringes is still strong even when actual hours are controlled for is not predicted by this simpler model but is a prediction of the wedge model.

C. Testing the Time Series Implications of the Wedge Model

The wedge model argues that hours constraints are illusory in the sense that workers consider jobs with different hours and the same average hourly pay to be preferable but cannot actually find such jobs because they are not economically viable. For example, in Figure 1, the worker with fringes imagines being able to choose a job with fewer hours along line OG, but the jobs along OG are not economically feasible. This worker will report wanting to work less but will not be able to find a job preferred to point G and hence over time will not be observed reducing his hours. Table 6 presents an empirical test of this prediction. The dependent variable is the change in total weekly

hours of work from May, 2001 to the following March, 2002. We already know from Table 1 that workers who report wanting to work fewer hours in May, 2001 are observed on average to be reducing their hours of work. The wedge model argues that the effect of wanting to work less on the subsequent change in hours will be much greater for workers without fringe benefits, and essentially zero for those with fringe benefits because they will not be able to find preferred jobs. Compare this prediction to that of the naïve search model mentioned above along with positive correlation across jobs between fringes and required hours. With purposeful search, those who say they would like to work less will on average reduce their hours. Since jobs with fringes on average require more hours, those in jobs with fringes at the beginning will be more likely to reduce their hours and those in jobs with fringes at the end will be more likely to have increased their hours over time. Only the wedge model and not the naïve model predicts that the marginal effect of wanting fewer hours will be greater for those without fringes than those with fringes.

In Table 6, I regress the change in hours on dummies for whether the worker said in May, 2001 he wanted to work fewer hours or more hours. Consistent with Table 1 and with search costs, workers who say they want to work less will on average over time move to work less, while workers who say they want to work more on average move to increase hours.⁹ I also control for fringe benefits at the beginning (May, 2001) and end of the period (March, 2002) to account for the fact that fringe benefits are associated with jobs that require more hours, so that even if workers are moving randomly between jobs they will be more likely to decrease their hours of work if they have a job with fringe

⁹ This is compared to the hours changes of the omitted group who are workers without fringe benefits who are satisfied with their hours. Also, the results in Table 6 do not condition on change in employer so some of the changes in hours may come from changes in hours with the same employer. However, Blundell, Brewer and Francesconi (2008) show that most hours changes accompany job changes.

benefits in May, 2001 and will be less likely to decrease their hours of work if they have a job with fringe benefits in March, 2002. The results are consistent with this prediction.

The crucial variable in testing the illusion of constraints is the interaction between wanting to work less in May, 2001 and the presence of fringe benefits. This variable should be positive, indicating that the marginal effect of wanting to work less on subsequent reductions in hours was lower for workers with fringe benefits in May, 2001 than for workers without fringe benefits. In effect, this is a difference in difference estimate because both wanting to work less and initial fringe benefits should affect subsequent hours changes, but the wedge model predicts that workers with fringe benefits who want to work less will find it more difficult to reduce hours than we would predict summing the independent effects of initial fringe benefits and wanting to work less.

The results reported in Table 6 use three different measures of fringes and are strongly consistent with the wedge model. The interaction between initial fringes and wanting to work less is significantly positive in all three regressions. The regression reported in Column (1) defines a fringe benefit as pension coverage and shows that among those without initial pension coverage, the subset who wanted to work fewer hours shed 3.31 more hours than those who were satisfied with their hours. This is consistent with purposeful search. However, looking at the group with initial pension coverage, the outcomes of the subset who said they wanted to work fewer hours ($-1.63 = -1.74 + 3.42 - 3.31$) are essentially the same as the outcomes of the subset who were satisfied with their hours (-1.74).¹⁰ As the wedge model predicts, workers may want to work less but jobs with fewer hours they prefer to their current job do not exist because

¹⁰ Formal tests of the null that the sum of the coefficients on “wants to work fewer hours” and the interaction between fringes and wants to work fewer hours is zero fail to reject for all three columns in Table 6. The standard errors of the sum range from .66 to .73.

they are economically infeasible. The hours constraints are illusory. This strong prediction of illusion is robust to alternative definitions of fringes (see columns (2) and (3) of Table 6) and to alternative unreported specifications such as probits on whether hours decreased from May, 2001 to March, 2002.

An alternative interpretation of the results in Tables 3, 4, and 5 is that actual hours are measured with error and fringes are positively correlated with the true value of actual hours. When both actual hours and fringes are included, fringes have a positive effect on wanting to work less because they are picking up the part of true actual hours not included in the noisy measure of actual hours. However, in this case, the change in hours estimates in Table 6 would be expected to show that comparing two workers who want to reduce their hours, the one with fringes would reduce his hours more (not less as the wedge model predicts and the estimates in Table 6 show) because that worker would be working more actual hours.

IV. Conclusion

Although many jobs do not allow workers to vary hours, neoclassical theory argues that workers can choose jobs with combinations of hours and compensation that suit them. However, some workers report wanting to work more or less than they currently work at the same rate of pay. This paper examines an explanation for these self-reported hours constraints based on a “wedge” or divergence between a menu of wage-hours choices at the worker’s current average hourly wage and the options that are economically feasible. Fatigue effects or set-up costs would generate a wedge but these are not easily observed. Fixed-cost fringe benefits also imply wedges and these are

observed, so the paper focuses on them. Search frictions and legal constraints like overtime premia are added to the model to generate two sets of empirical predictions. One concerns cross-section differences between workers who say they want to work more, less or the same. The second set of empirical predictions concerns the changes in work hours over time as a function of stated desires to work more or less and the presence of fringes.

The empirical results show that both strong predictions of the “wedge” model are strongly confirmed. First, having a job with fixed-cost fringe benefits is strongly associated, as theory predicts, with wanting to work less even when we control for actual hours of work. Since fringe benefits are positively correlated with actual hours and actual hours raise the probability of wanting to work less in pure mismatch models, only a finding of a fringe benefit effect, holding actual hours constant, would lend support to the wedge model. Second, when looking at the changes in hours over time, the effect of hours dissatisfaction is strong for the group of workers without fringe benefits but is nil for workers with fixed-cost fringe benefits. That is, those without fringes who want to work less are able to find preferred jobs with fewer hours while those dissatisfied workers with fringes are not. This is strong evidence consistent with the notion that the self-reported hours constraints induced by fringe benefit wedges are illusory in the sense that no economically feasible preferable alternative can be found.

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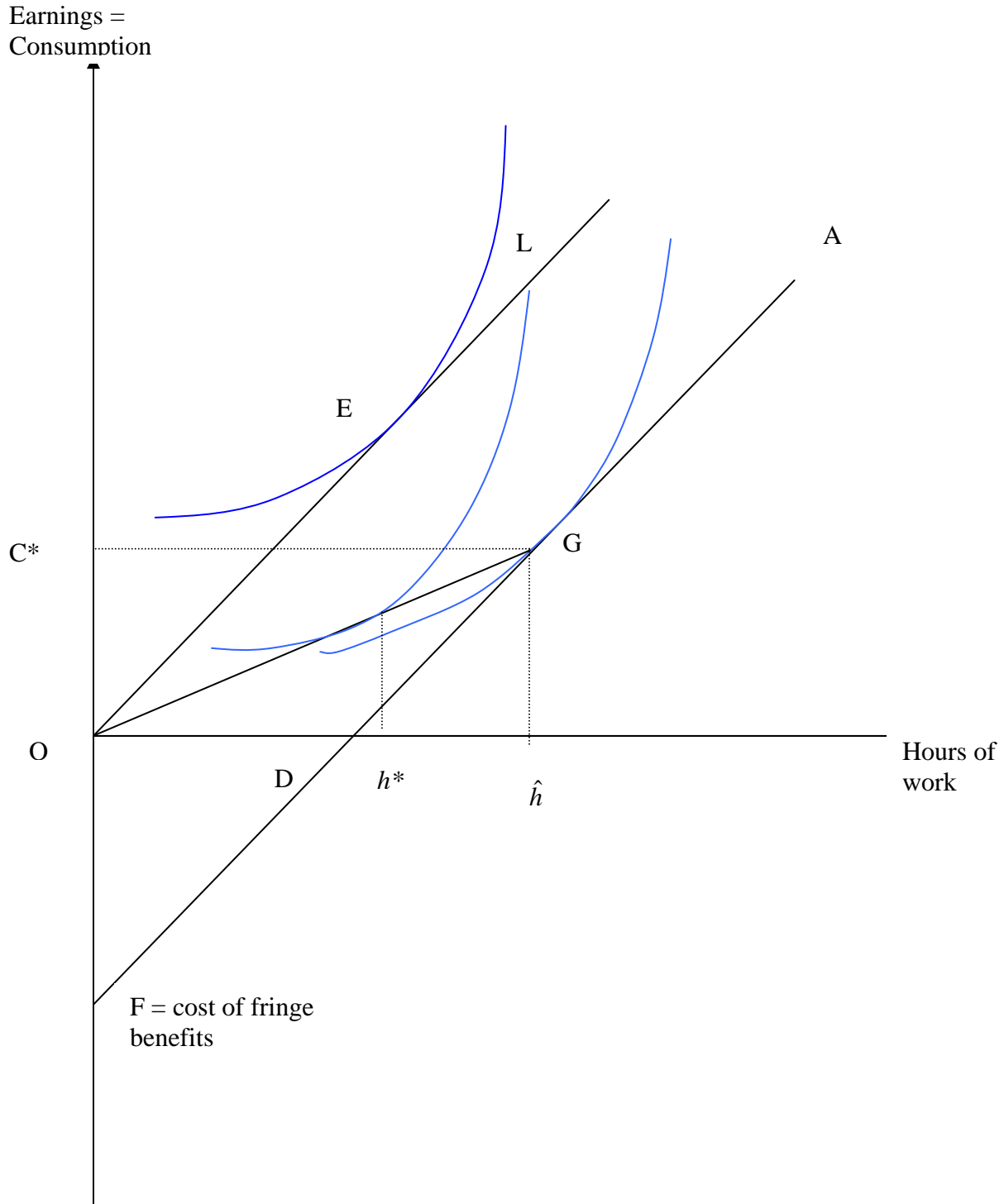


Figure 1: Fringe Benefits and Hours Constraints

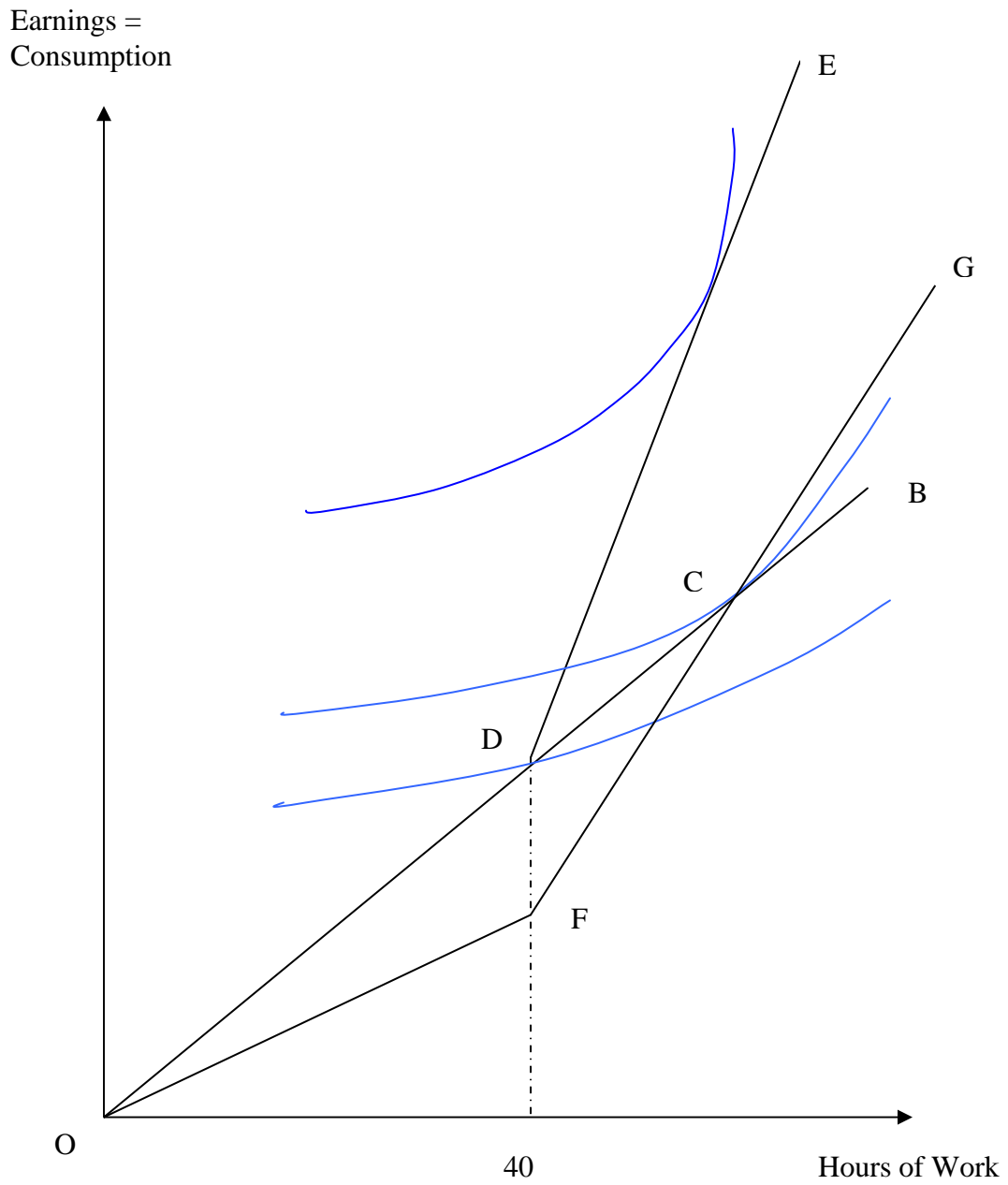


Figure 2: Overtime Premium

Table 1: Dissatisfaction with Current Hours and Subsequent Changes in Hours

Self Reported Hours Constraints in May 2001	Average Change in Weekly Hours from May 2001 to March 2002
	-1.66
Wants to Work Less	(.58)
	-.72
Satisfied with Hours	(.17)
	.57
Wants to Work More	(.30)

Source: Matched observations from the CPS in May 2001 and in March 2002 who were employed in both surveys; standard errors in parentheses

Table 2: Descriptive Statistics

Variable	Mean Value or Proportion of Sample	Proportion Wanting to Work Less	Proportion Wanting to Work More
Whole Sample	1.0	.072	.249
Males	.508	.053	.277
Females	.492	.092	.221
White	.861	.075	.236
Non-White	.139	.053	.277
Weekly hours	39.49 (12.7)		
Worker has pension	.548	.082	.194
Employer contribution to health insurance (\$1000)	1.82 (1.88)		
Worker is paid hourly	.59	.061	.304
Schooling less than 12 years	.11	.044	.386
Schooling 12 Years	.316	.060	.268
Schooling between 13 and 15 years	.29	.070	.258
Schooling 16 years or more	.284	.098	.164

Note: Matched CPS March, 2001 and May, 2001 samples. Restricted to individuals employed at same job in both months. Sample mean with sample standard deviation in parentheses.

Table 3: Probit Estimates of Hours Constraints: Worker Wants to Work Less

	(1)	(2)	(3)	(4)
Worker has pension coverage on job	.040 (.034) [.005]	.036 (.034) [.005]	.019 (.034) [.002]	.016 (.035) [.002]
Employer Contribution to Worker Health Insurance (\$1000)	.039*** (.009) [.005]	.037*** (.09) [.005]	.028*** (.009) [.004]	.025*** (.009) [.003]
Worker is Paid Hourly	_____	-.151*** (.043) [-.019]	-.122*** (.043) [-.015]	-.102** (.045) [-.012]
Actual Hours	_____	_____	.009*** (.001) [.001]	.008*** (.001) [.001]
Age, Race, Gender, Education, Region dummies	X	X	X	X
Industry, Occupation Dummies				X
Number of Observations	17039	17039	17039	17039

Note: Matched observations from March, 2001 and May, 2001 Current Population Surveys. Robust standard errors in parentheses. In square brackets are effects of one unit change in variable on probability of wanting fewer hours, evaluated at the means. Each regression includes age, a dummy for white, a gender dummy, three education dummies, eight Census region dummies, and a dummy for missing data on whether worker is paid hourly. *** = 1% significance, ** = 5% significance, * = 10% significance.

Table 4: Probit Estimates of Hours Constraints: Worker Wants to Work More

	(1)	(2)	(3)	(4)
Worker has pension coverage on job	-.153*** (.025) [-.047]	-.148*** (.024) [-.045]	-.141*** (.025) [-.043]	-.125*** (.026) [-.038]
Employer Contribution to Worker Health Insurance (\$1000)	-.051*** (.007) [-.015]	-.049*** (.007) [-.015]	-.046*** (.007) [-.014]	-.039*** (.007) [-.012]
Worker is Paid Hourly	_____	.269*** (.033) [.085]	.259*** (.033) [.082]	.242*** (.034) [.076]
Actual Hours	_____	_____	-.003*** (.001) [-.001]	-.002* (.001) [-.001]
Age, Race, Gender, Education, Region dummies	X	X	X	X
Industry, Occupation Dummies				X
Number of Observations	17039	17039	17039	17039

Note: Matched observations from March, 2001 and May, 2001 Current Population Surveys. Robust standard errors in parentheses. In square brackets are effects of one unit change in variable on probability of wanting more hours, evaluated at the means. Each regression includes age, a dummy for white, a gender dummy, three education dummies, eight Census region dummies, and a dummy for missing data on whether the worker is paid hourly. *** = 1% significance, ** = 5% significance, * = 10% significance.

Table 5: Ordered Probit Estimates of Hours Constraints

	(1)	(2)	(3)	(4)
Worker has pension coverage on job	-.123*** (.021)	-.118*** (.021)	-.106*** (.022)	-.094*** (.022)
Employer Contribution to Worker Health Insurance (\$1000)	-.047*** (.006)	-.045*** (.006)	-.039*** (.006)	-.034*** (.006)
Worker is Paid Hourly	—	.227*** (.027)	.210*** (.028)	.193*** (.029)
Actual Hours	—	—	-.005*** (.001)	-.004*** (.001)
Age, Race, Gender, Education, Region dummies	X	X	X	X
Industry, Occupation Dummies				X
Number of Observations	17039	17039	17039	17039

Note: Matched observations from March, 2001 and May, 2001 Current Population Surveys. Dependent variable is 1 if worker wants to work less, 2 if worker wants to work neither more nor less, 3 if worker wants to work more. Robust standard errors in parentheses. Each regression includes age, a dummy for white, a gender dummy, three education dummies, eight Census region dummies, and a dummy for missing data on whether the worker is paid hourly. *** = 1% significance, ** = 5% significance, * = 10% significance.

Table 6: Testing the Illusion Hypothesis

Dependent Variable: Change in Weekly Hours from May 2001 to March 2002

	(1)	(2)	(3)
	Fringe = Pension Coverage	Fringe = Health Insurance	Fringe = Either Pension Coverage or Health Insurance
Fringe in May '01	-1.74*** (.36)	-2.78*** (.37)	-3.45*** (.43)
Fringe in Mar '02	2.39*** (.34)	3.09*** (.36)	3.63*** (.41)
Fringe in May '01 × Wants to Work Fewer Hours	3.42*** (1.25)	4.25*** (1.24)	5.72*** (1.49)
Wants to Work Fewer Hours	-3.31*** (1.02)	-3.85*** (1.01)	-5.67*** (1.34)
Wants to Work More Hours	1.31*** (.36)	1.39*** (.35)	1.27*** (.36)
Number of Observations	9292	9292	9292

Note: Matched observations from March, 2001, May, 2001 and March, 2002 Current Population Surveys. Robust standard errors in parentheses. Each regression includes controls for gender, race, age, education, region, industry and occupation. *** = 1% significance, ** = 5% significance, * = 10% significance.