

The Effect of Job Flexibility on Women Labor Market Outcomes: Estimates from a Search and Bargaining Model

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Abstract

This paper presents and estimate a search model of the labor market where jobs are characterized by wages and work-hours flexibility. Flexibility is valued by workers, and is costly to provide for employers. The model generates observed wage distributions directly related to the preference for flexibility parameters: the higher the preference for flexibility, the wider is the support of the wage distribution at flexible jobs and the larger is the discontinuity between the wage distribution at flexible and non-flexible jobs. Results show that more than one third of women place positive value to flexibility, and that reducing the cost of flexibility may considerably reduce the gender wage gap.

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1 Introduction

Do women have a special preference for job flexibility? We answer this question by estimating a model in which workers have preferences for wages and a job attribute. In doing so, we propose an alternative explanation to the persistence of gender wage differentials in the labor market.

Women are known to spend more time in home production and child-rearing. Work hours flexibility, such as the possibility of working part-time, seems a job amenity particularly favored by women when interviewed about job conditions¹ and the descriptive empirical evidence is consistent with this assessment. In light of this evidence, we posit a search-matching-bargaining model of the labor market, where jobs can be flexible or not. Employers pay a cost to provide flexibility, because it makes it more difficult to coordinate workers, and because it may require the hiring of a higher number of workers, which implies additional search and training costs. Workers and firms meet and bargain over wages and flexibility. Wage heterogeneity arises exogenously as a result of idiosyncratic match-specific productivity and heterogeneity in preferences for flexibility, and endogenously as a result of the bargaining process. Wages are determined in equilibrium, therefore the difference between the wage in flexible and non-flexible jobs is not only a compensating wage differential. This implies that the observed average wage differential between flexible and non-flexible jobs is not an estimate of the either the average or the marginal preference for flexibility, as it could be in a competitive setting.

Hedonic wage models are a standard setting to estimate preferences for job attributes: they assume a static equilibrium model in a competitive labor market.² However, if there are any frictions that may make the market not competitive, hedonic wage regressions produce biased estimates. The bias arises for two reasons. First, flexibility is a choice, therefore the standard selection argument applies: we may not always observe the wage that workers choosing flexible jobs would receive had they chosen a different type of job. This bias could be identified by observing the wage pattern of workers that choose different flexibility regimes over their career. This approach is problematic because there are few workers that change their flexibility regime over their life time. Moreover, it is crucial in this approach to control appropriately for job market experience, but it is difficult to do so if experience is a choice that is affected in part by preferences for flexibility. An alternative is to model the selection with appropriate exclusion restrictions, as for example in our approach.

The second reason for the bias is that in hedonic wage models the compensating differential mechanism is working perfectly so that the conditional wage differential is a direct result of preferences. Hwang, Mortensen and Reed (1998) develop a search model of the labor market showing how frictions interfering with the perfect working of a compensating differential mechanism may bias estimates from an hedonic wage model³. The bias may be so severe that the estimated willingness to pay for a job amenity may have the opposite sign than the true one. The intuition is as follow. In an hedonic wage model a job amenity is estimated to convey positive utility only if the conditional mean wage of individuals at job with amenity is lower than the conditional mean of individuals without the job amenity.

¹See for example Scandura and Lankau 1997.

²Rosen (1974, 1976) is the general reference; Altonji and Paxson (1988) is an application to hours worked. Topel (1986) is an attempt of a dynamic hedonic price model.

³Usui (2006) is an application to hours worked that confirm their results.

However, in presence of on-the-job search and wage posting, firms may gain positive profit by offering both a higher wage and the job amenity because doing so will reduce workers turnover. The presence of the job amenity affects the entire wage distribution, which also depends on the value of the outside option. The observed wage distribution may then exhibit a positive correlation between wages and job amenity even if workers are willing to pay for it. We obtain a similar result without on-the-job search but as a result of the bargaining game: when workers and employers meet, they observe a match-specific productivity draw and then engage in bargaining over wages and job amenities. We then obtain a mapping from productivity to wages that depends on preferences for the job amenity in two ways: directly through the offer of the job amenities (the compensating differential mechanism) and indirectly through the value of the outside option (the bargaining mechanism). This framework generates an estimable search model and at the same time solves the main criticism moved to the hedonic wage model by Hwang, Mortensen and Reed (1998).

The introduction of frictions and the presence of preferences over job amenities also imply that policy intervention may be welfare improving because, as mentioned, the compensating differentials mechanism is only partially at work.⁴ Estimating the model on a representative sample of U.S. individuals also allow us to evaluate some relevant policy interventions.

Our model generates wage distributions for flexible and non-flexible jobs. The originality in terms of identification is in the mapping from the observed wage distributions and the preference for flexibility parameters. *Fixing the preference for flexibility*, the two wage distributions have non-overlapping support, and the size of the gap is measured by the monetary value of the preference for flexibility (the compensating wage differential paid to the worker that marginally rejects flexibility). The higher the preference for flexibility, the wider is the support of the wage distribution at flexible jobs and the larger is the discontinuity between the wage distribution at flexible and non-flexible jobs. This is a result of allowing workers to bargain over wages when meeting employers generating equilibrium wage schedules that are functions of the match-specific productivity, the outside option and the flexibility regime. The firms' cost of providing flexibility is also identified, because, given preferences, a higher cost implies fewer flexible jobs in equilibrium.

We estimate our model using a simulated method of moments approach to minimize a loss function that includes several moments of the wage distributions of flexible and non-flexible jobs and of unemployment durations. Our estimates fit the data very well. We find that flexibility is important to women. Approximately 37 percent of college-educated women have positive preference for flexible jobs, even though only about 20 percent of them choose such jobs. The average value of flexibility is about 3.5 cents per hour worked for college educated women, and 1.5 cents per hour worked for women with at most a high school degree. Our counterfactual policy experiments finds that flexibility is relevant and has significant impacts on labor market outcomes. In particular, with respect to the literature on wage differentials we can suggest that policies that reduce the cost of flexibility have the potential to substantially reduce the gender wage gap

Empirical implementation of models with frictions capable of recovering preferences for flexibility is extremely limited. Gronberg and Reed (1994) simply impose a parametric functional form for the hazard function and use only duration information to estimate preferences. Blau (1991) is more ambitious and general assuming a search framework where

⁴Hwang, Mortensen and Reed (1998) and Lang and Majumdar (2004) explicitly make this point.

jobs are characterized by job amenities and not simply by wages. However, he is not specifically concerned with job flexibility and gender differentials and the correlation between wages and job amenities generated by his model is not appropriate for our application.

The paper is organized as follows; in the next section we present the model discussing its empirical implication. Section 3 illustrates the data we intend to use for estimation. Section 4 discusses the identification; and Section 5 presents the estimation procedure. Section 6 discusses the estimation results and section 7 illustrates some policy experiments. The last section summarizes and concludes.

2 The Model

2.1 Environment

We consider a search model in continuous time with each job characterized by:

$$(w, h)$$

where w is wage and h is a job regime related to flexibility in hours worked. h is an additional amenity attached to the job. Workers have different preferences with respect to h and firms pay a cost to provide it.

Workers' instantaneous utility when employed is:

$$u(w, h; \alpha) = w + \alpha h, h \in \{0, 1\}; \alpha \sim H(\alpha) \quad (1)$$

where α defines the marginal willingness to pay for flexibility, the crucial preference parameter of the model, and it is distributed in the population following the distribution H . For the presentation of the model we assume first an environment with no gender. The specification of the utility function is very restrictive but we prefer to present the specification that we think is possible to identify. More general specifications are possible, but the restriction that w and h enter additively in the utility function is crucial and difficult to remove if one needs to obtain a tractable equilibrium in a search environment.⁵

Workers instantaneous utility when unemployed is defined by a utility (or disutility) level $b(\alpha)$. This parameter is type-specific to allow for the possibility that individuals with higher preference for flexibility have different preferences for being unemployed. There is no participation decision so workers can only be either employed or unemployed.

Firms instantaneous profit from a filled job are:

$$pr(x, w, h; k) = (1 - kh)x - w, k \in [0, 1] \quad (2)$$

where x denotes the match-specific productivity and k is the firm cost of providing flexibility.⁶ The interpretation is that the match-specific productivity x . Cost k arises from the

⁵Hwang, Mortensen and Reed (1998) proves the general theoretical results. Dey and Flinn (2005) is an application using a similar utility function to estimate the marginal willingness to pay of employer-provided health insurance within a search model framework.

⁶Standard equilibrium search model assume a cost (usually homogenous) of posting a vacancy and then free-entry with endogenous meeting rates (usually determined by a matching function) to close the model. However these costs are very difficult to identify using workers data, so as a first step we will simply assume firm have no cost of posting a vacancy.

need to coordinate workers when tasks require the input of more than one workers, and possibly the need to hire a higher number of workers when flexibility is provided, which generates search and training costs. Crucially, the total cost of flexibility kx is proportional to potential productivity x : the potential loss of productivity that derives from lack of worker's coordination is higher when workers are more productive, and training costs are higher when workers have higher skills.

Workers meet firms following a Poisson process with exogenous instantaneous arrival rate λ . Once workers and employers meet, they observe their types (defined by α, k) and draw the match specific productivity distributed in the population from distribution G : $x \sim G(x)$. This is an additional source of heterogeneity resulting from the match of a specific worker with a specific employer. It is the "match heterogeneity" on top of the workers heterogeneity in preferences and the firms heterogeneity in the cost for flexibility. Given this information, both agents engage in bargaining over a job offer defined by the pair (w, h) .

A match can be terminated according to a Poisson process with arrival rate η . There is no on-the-job search and the instantaneous common discount rate is ρ .

2.2 The Bargaining Game

In this environment, the value functions in recursive form can be written as follows. For an employed worker:

$$V_E(w, h; \alpha, k) = \frac{w + \alpha h + \eta V_U(\alpha)}{\rho + \eta} \quad (3)$$

for an unemployed worker:

$$V_U(\alpha) = \frac{b(\alpha) + \lambda \int \max[V_E(w, h; \alpha, k) - V_U(\alpha), 0] dG(x)}{\rho} \quad (4)$$

and for the firm:

$$V_F(pr, h; \alpha, k) = \frac{(1 - kh)x - w}{\rho + \eta} \quad (5)$$

The Nash-bargaining job offers determination is based on worker's and firm's surplus, using the value of unemployment and zero profits, respectively, as threat points:

$$\begin{aligned} S(x, w, h; \alpha, k) &\equiv [V_E(w, h; \alpha, k) - V_U(\alpha)]^\beta [V_F(x, w, h; \alpha, k)]^{(1-\beta)} \\ &= \frac{1}{\rho + \eta} [w + \alpha h - \rho V_U(\alpha)]^\beta [(1 - kh)x - w]^{(1-\beta)} \end{aligned} \quad (6)$$

The solution is characterized as follows:

$$\{\tilde{w}, \tilde{h}\} = \arg \max_{w, h} S(x, w, h; \alpha, k) \quad (7)$$

The solution of the problem is computed first by conditioning on the flexibility regime and then solving for the wage schedule. Conditioning on the flexibility regime, the standard Nash-bargaining axiomatic solution is given by:

$$\begin{aligned} \tilde{w}(x, h) &= \arg \max_w S(x, w, h; \alpha, k) \\ &= \beta(1 - kh)x + (1 - \beta)[\rho V_U(\alpha) - \alpha h] \end{aligned} \quad (8)$$

so that the reservation productivity value to accept the match conditioning on the flexibility regime is:

$$x^*(h) = \frac{\rho V_U(\alpha) - \alpha h}{1 - kh} \quad (9)$$

and the reservation wage is:

$$w^*(h) = \rho V_U(\alpha) - \alpha h \quad (10)$$

Notice that in the non-flexible regime we obtain the solution of the standard search model where jobs only characterized by a wage:

$$w^*(0) = x^*(0) = \rho V_U(\alpha)$$

The choice of the flexibility regime for the two agents, will then result by the following comparisons:

$$\begin{aligned} V_E(\tilde{w}(x, 1), 1; \alpha, k) - V_E(\tilde{w}(x, 0), 0; \alpha, k) &\leq 0 \\ V_F(x, \tilde{w}(x, 1), 1; \alpha, k) - V_F(x, \tilde{w}(x, 0), 0; \alpha, k) &\leq 0 \end{aligned} \quad (11)$$

Nash-bargaining implies that there is an agreement between worker and firm: i.e. they will both agree on which match values are acceptable and which are not. The optimal decision rule has the reservation value property: agents accept a non-flexible job if the match specific productivity draw is above a threshold. This reservation match value is given by:

$$x^{**} = \frac{\alpha}{k} \quad (12)$$

A higher value for flexibility α and a lower cost of providing it k make it more likely that a job with flexibility is accepted.

2.3 Equilibrium

The optimal decision rules are conditional on α and they are qualitatively different in different regions of the support of the $H(\alpha)$ distribution. The crucial comparison is between the three reservation values defined in (9) and (12): $\{x^*(0), x^*(1), x^{**}\}$. Depending on the parameter values, two cases apply.

Case 1. Consider first the case where parameters values imply $\alpha > k\rho V_U(\alpha)$. Then, the following relationship between reservation values applies:

$$x^*(1) < x^*(0) < x^{**}$$

the optimal decision rule therefore implies:

$$\begin{aligned} x < x^*(1) &\text{ reject the match} \\ x^*(1) < x < x^{**} &\text{ accept the match } \{\tilde{w}(x, 1), 1\} \\ x^{**} < x &\text{ accept the match } \{\tilde{w}(x, 0), 0\} \end{aligned}$$

For an intuition, recall that the surplus is monotonic in x . For very low values of the match-specific productivity, both agents prefer the outside option. The point of indifference for

switching state is reached at $x = x^*(1)$ where both agents are indifferent between leaving the match or entering a match with a flexible regime and the wage determined by the match schedule (8). Between $x^*(1)$ and $x^*(0)$ only jobs with a flexible regime are acceptable: without such job amenity these values of productivity would all be rejected. At $x = x^*(0)$ also non-flexible jobs start to be acceptable in an environment where the only outside option is rejecting the match. However up to $x = x^{**}$ the surplus generated by a flexible job is higher than the surplus generated by a non-flexible job, as shown by equation (11). Only for values of match-specific productivity higher than x^{**} the optimal decision rule is to accept a non-flexible job with wage determined by (8). Finally, by monotonicity of the difference (11), it is guaranteed that this will remain the optimal decision rule for the rest of the support of x .

Given the optimal decision rules and conditioning on α , the value of unemployment can be rewritten as:

$$\begin{aligned} \rho V_U(\alpha) &= b(\alpha) + \lambda \int_{x^*(1)}^{x^{**}} [V_E(\tilde{w}(x, 1), 1; \alpha, k) - V_U(\alpha)] dG(x) \\ &\quad + \lambda \int_{x^{**}} [V_E(\tilde{w}(x, 0), 0; \alpha, k) - V_U(\alpha)] dG(x) \end{aligned} \quad (13)$$

that by substitution of the optimal wages schedules and value functions becomes:

$$\begin{aligned} \rho V_U(\alpha) &= b(\alpha) + \frac{\lambda\beta}{\rho + \eta} \int_{\frac{\rho V_U(\alpha) - \alpha}{1-k}}^{\frac{\alpha}{k}} \left[x - \frac{\rho V_U(\alpha) - \alpha}{1-k} \right] dG(x) \\ &\quad + \frac{\lambda\beta}{\rho + \eta} \int_{\frac{\alpha}{k}} [x - \rho V_U(\alpha)] dG(x) \end{aligned} \quad (14)$$

where notice that the value of unemployment is implicitly defined by an equation that depends only on parameters. Given that $G(x)$ is a distribution, this equation has a unique solution for $V_U(\alpha)$. Equation (14) complete the characterization of the behavior for individuals with $\alpha > k\rho V_U(\alpha)$.

Case 2. When $\alpha < k\rho V_U(\alpha)$ the following relations between parameters applies:

$$x^{**} < x^*(0) < x^*(1)$$

implying the following optimal decision rule:

$$\begin{aligned} x &< x^*(0) && \text{reject the match} \\ x^*(0) &< x && \text{accept the match } \{\tilde{w}(x, 0), 0\} \end{aligned}$$

In this case the added utility of flexibility relative to the cost of providing it is not enough to generate acceptable flexible jobs: only non-flexible jobs with high enough match-specific productivity will be acceptable to both agents. To see why just remember that for any $x > x^{**}$ the surplus generated by a non-flexible job is always higher than the surplus generated by a flexible job.

Given the optimal decision rules and conditioning on α , the value of unemployment can be rewritten as:

$$\rho V_U(\alpha) = b(\alpha) + \lambda \int_{\rho V_U(\alpha)} [V_E(\tilde{w}(x, 0), 0; \alpha, k) - V_U(\alpha)] dG(x) \quad (15)$$

that by substitution of the optimal wages schedules and value functions becomes:

$$\rho V_U(0) = b(\alpha) + \frac{\lambda\beta}{\rho + \eta} \int_{\rho V_U(0)} [x - \rho V_U(0)] dG(x) \quad (16)$$

This equation shows that the value of unemployment is implicitly defined by an equation that depends only on parameters but that does depend on α only if the value of unemployment is type-specific. To emphasize this fact, we are denoting now the value of unemployment as a constant $\rho V_U(0)$ and not as a function of α . Theoretically, this result is important and useful because allows to partition the support of α in a region that can potentially generate acceptable flexible jobs and a region that does not. Empirically, it reduces identification because all the α such that $\alpha < k\rho V_U(\alpha)$ are shown to be equivalent in terms of observed behavior.

In sum, it is possible to define the equilibrium as follows.

Definition 1 *Given $\{\lambda, \eta, \rho, \beta, b(\alpha), k, G(x), H(\alpha)\}$ an equilibrium is a value $V_U(0)$ that solves equation (16) and a set of $V_U(\alpha)$ that solve equation (14) for any $\alpha > k\rho V_U(0)$ in the support of $H(\alpha)$.*

The interpretation is that only for relatively high productive matches the higher wages compensate the worker for not having a flexible job. The range of productivities on which flexible jobs are accepted is directly related to preferences since an higher α means an higher upper bound for the $\{\tilde{w}(x, 1), 1\}$ jobs regions. Another interesting implications is about the $[x^*(1), x^*(0)]$ region: this region is proportional to the region of matches that would not be created without the flexible job option. In a sense this is an efficiency gain of having the option to offer flexible jobs. The equilibrium exists and it is unique because equations (14) and (16) admit a unique solution.

2.4 Empirical Implications

To give an example of the empirical content of the model, we consider three parameters configurations, each with different empirical implications.

If there is only one type of worker with $0 \leq \alpha < k\rho V_U(0)$ then in equilibrium we will observe only non-flexible jobs. If there are two types of workers, one with $0 \leq \alpha_1 < k\rho V_U(0)$, and the other with $k\rho V_U(\alpha_2) \leq \alpha_2$ then in equilibrium we will observe both flexible and non-flexible jobs. The proportion of the two types of jobs depends on the proportion of the two types of workers in the population. Finally, if there is only one type with $k\rho V_U(\alpha) \leq \alpha$ and $\alpha > k\bar{x}$ (where \bar{x} is the upper-bound of the support of $G(x)$) then in equilibrium we will observe only flexible jobs. These results are generalizable to a larger number of types or a continuous distribution of types, showing the ability of the model to match, and possibly fit, different configuration of observables (assuming the observables are the flexibility regime - flexible or non-flexible-, accepted wages and unemployment durations).

To gain some intuition for the identification of the preference for flexibility, now show how such preferences affect the wage distribution. A formal discussion of the parameters identification is presented in Section 4.

Suppose to have only one type $\alpha > k\rho V_U(\alpha)$ and the support of $G(x)$ is equal to the positive real line. Then the equilibrium generates a distribution of wages over both flexible

and non-flexible regimes and a distribution of unemployment durations. The accepted wage distribution does not have a connected support. The lower bound of the wage distribution is given by the wage of the worker that marginally accepts a flexible job, $\tilde{w}(x^*(1), 1)$; the maximum accepted wage in a flexible job is $\tilde{w}(x^{**}, 1)$, and the wage distribution is obtained by mapping the density of productivities in wages following the $\tilde{w}(x, 1)$ function. For $x > x^{**}$, however, the wage distribution is governed by the $\tilde{w}(x, 0)$ so that on the region $(\tilde{w}(x^{**}, 1), \tilde{w}(x^{**}, 0))$ the accepted wage distribution does not place any probability mass. This region is exactly equal to:

$$\tilde{w}(x^{**}, 0) - \tilde{w}(x^{**}, 1) = \alpha \tag{17}$$

showing a link between the size of the preference for flexibility and the accepted wage distribution. The worker with productivity x^{**} is indifferent between a flexible and non-flexible job, and α is her compensating wage differential.

3 Data

For identification purposes, we need a data set reporting at least accepted wages, unemployment duration, a flexibility regime indicator and some additional controls to insure a degree of homogeneity to the estimation sample.

Finding a good flexibility indicator is a difficult task: ideally we would like to have a variable showing if the worker can freely choose how to allocate her working hours. In practice some of these mechanisms are in place and are observable (like the so called *flexitime* option allowing workers to enter and exit the job at her chosen time, or allowing workers to bundle extra working hours to gain some days off). However, there is lack of an homogenous definition across firms and industries of these types of contract. Moreover, we strongly prefer to provide estimates based on a representative sample of the population than on specific firm or occupation. For this reason we use a very limited but at least transparent and comparable definition of flexibility that allows us to use a standard and representative sample of the US labor market (the *Current Population Survey*). The definition we use is based on hours worked under the assumption that working fewer hours per week are a way to obtain the flexibility we are interested in. For comparability across workers with different flexibility choices, wages will then be measured in dollars per hour.

The relevant variables that we can extract from Current Population Survey (CPS) data (conditioning on some demographic and human capital controls) are: on-going unemployment durations observed for individuals currently unemployed (t_i); accepted wages observed for individuals currently employed (w_i) and the flexibility regime (h_i) where the worker is assumed to be in a flexible job if working less than 35 hours per week.

We consider only individuals that declare themselves as white, in the age range 30-55 years old, and that belong to two educational levels: High School completed (High School sample) and at least College completed (College sample). Data are extracted from the *Annual Social and Economic Supplement* (ASES or March supplement) of the Current Population Survey (CPS) for the year 2005. To avoid outliers and top-coding issues we trim hourly earnings excluding the top and the bottom 1% of the raw data. We obtain a sample whose descriptive statistics are presented in Table 1. Accepted earnings are measured in dollars per hour and unemployment durations in months.

Females	College	High School
N. flexible	264	240
N. non-flexible	1058	854
Average wage flexible	22.5 (14.2)	10.3 (4.3)
Average wage non-flexible	23.4 (10.3)	13.9 (5.9)
Min-Max wage flexible	2.4-70	2.13-26.7
Min-Max wage non-flexible	7-57.7	3.65-38.5
Avg hours worked flex	21.3 (7.7)	23.4 (7.6)
Avg hours worked non-flexible	42.7 (6.4)	40.5 (3.8)
N. unemployed	34	72
Avg. unempl. duration	4.4 (5.2)	4.6 (5.9)

Standard deviations in parenthesis

Table 1: Descriptive statistics

4 Identification

The model without the additional job amenity flexibility and without the preference parameter for it can be mapped into the “two-state” model in Flinn and Heckman (1982). They show that in such model unemployment durations identify the hazard rate out of unemployment and the termination rate of a job; given an appropriate parametric assumption on the productivity distribution, its parameters are identified by the accepted wage distribution. However, parameters ρ and b can only be jointly identified. This is because ρ enters directly in the likelihood only multiplied by the value of unemployment (as, in our case $\rho V_U(\alpha)$) which, however, is not a primitive parameter, but an implicit function of the primitive parameters (see our equations (14) and (16)). The discounted value of unemployment is identified using the minimum observed wage in the sample. Parameter b is computed by solving the the value of unemployment equation for a fixed ρ . We follow the same procedure and fix ρ at values found in the literature, without attempting to estimate it.

Our model however contains two additional sets of parameters left to be identified: the distribution of preferences for flexibility, α and the cost of providing flexibility k .⁷

We assume a discrete type distribution $H(\alpha)$ with a finite number of types α_j each with probability p_j . Recall that the equilibrium partitions the wage support in intervals over which a job is acceptable only for a given flexibility regime conditioning on the α -type. Therefore a given wage and flexibility realization conveys some information about what type that particular individuals may belong to. An example should clarify how this mapping is taking place.

EXAMPLE:

⁷In truth, one additional parameters is left to be identified: the Nash-bargaining coefficient β . However, its identification is extremely hard without demand side information (Flinn 2006, Eckstein and Wolpin 1995) and we will not attempt to do it. In estimation we will assume symmetric Nash-bargaining based on the fact that both workers and employers share the same discount rate; this implies a fix β at 1/2.

Suppose to have three types:

$$\begin{aligned}\alpha_0 &= 0 \\ \alpha_1 &: \alpha_1 > k\rho V_U(\alpha_1) \\ \alpha_2 &> \alpha_1 : \alpha_2 > k\rho V_U(\alpha_2)\end{aligned}$$

A feasible configuration of the reservation wages is:⁸

$$\begin{aligned}\tilde{w}(x^*(0, \alpha_0), 0) &< \tilde{w}(x^{**}(\alpha_1), 0) < \tilde{w}(x^{**}(\alpha_2), 0) \\ \tilde{w}(x^*(1, \alpha_2), 1) &< \tilde{w}(x^*(1, \alpha_1), 1) < \tilde{w}(x^{**}(\alpha_1), 1) < \tilde{w}(x^{**}(\alpha_2), 1)\end{aligned}$$

generating three intervals in the support of the accepted wages at job with and without flexibility. The equilibrium implies that the mapping from observed wages and the probability of being of a given type (denoted by $\pi_j(w_i, h_i; \mathbf{p})$) is as follows:

Observed $\{w_i, h_i\}$	$\pi_0(w_i, h_i; \mathbf{p})$	$\pi_1(w_i, h_i; \mathbf{p})$	$\pi_2(w_i, h_i; \mathbf{p})$
<i>h_i = 1 and</i>			
$\tilde{w}(x^*(1, \alpha_2), 1) \leq w_i < \tilde{w}(x^*(1, \alpha_1), 1)$	0	0	1
$\tilde{w}(x^*(1, \alpha_1), 1) \leq w_i < \tilde{w}(x^{**}(\alpha_1), 1)$	0	$\frac{p_1}{p_1 + p_2}$	$\frac{p_2}{p_1 + p_2}$
$\tilde{w}(x^{**}(\alpha_1), 1) \leq w_i < \tilde{w}(x^{**}(\alpha_2), 1)$	0	0	1
<i>h_i = 0 and</i>			
$\tilde{w}(x^*(0, \alpha_0), 0) \leq w_i < \tilde{w}(x^{**}(\alpha_1), 0)$	1	0	0
$\tilde{w}(x^{**}(\alpha_1), 0) \leq w_i < \tilde{w}(x^{**}(\alpha_2), 0)$	$\frac{1 - p_1 - p_2}{1 - p_2}$	$\frac{p_1}{1 - p_2}$	0
$\tilde{w}(x^{**}(\alpha_2), 0) \leq w_i$	$1 - p_1 - p_2$	p_1	p_2

Interestingly, in some cases the information is enough to fully identify a given type - for example when we observe a flexible job with $w_i < \tilde{w}(x^*(1, \alpha_1), 1)$ the individual will be type-2 with probability 1 - while in other case the π 's coincide with the primitive probabilities - for example when we observe a flexible job with $\tilde{w}(x^{**}(\alpha_2), 0) \leq w_i$. The problem is, however, that all these reservation wage values are themselves a function of the primitive parameters we want to estimate.

A first implication from the example is that α is not identified if $\alpha < k\rho V_U(0)$. The reason is that in this case all accepted jobs are non-flexible and flexibility has no impact on these types of workers. We will denote the α such that this is the case with α_0 , normalize its value to zero. We believe this normalization is almost without loss of generality because the α 's we estimate from our sample are quite small and therefore the variation in α -types in the region such that $\alpha < k\rho V_U(0)$ is likely to be negligible.

Second, an environment that generates both flexibility regimes (as we observe in the data) it must have at least one α type such that $\alpha > k\rho V_U(\alpha)$. Suppose there is only one such type. Because of the discontinuity in the wage support illustrated in Subsection 2.4,

⁸This configuration may change depending on the values of the parameters: that is other configuration are feasible given other parameters but given a complete set of parameters only one configuration is realized in equilibrium.

the accepted wage distribution for this type of individuals will exhibit the following three truncation points

$$\tilde{w}(x^*(1), 1) = \rho V_U(\alpha) - \alpha \quad (18)$$

$$\tilde{w}(x^{**}, 1) = \beta(1-k)\frac{\alpha}{k} + (1-\beta)[\rho V_U(\alpha) - \alpha] \quad (19)$$

$$\tilde{w}(x^{**}, 0) = \beta\frac{\alpha}{k} + (1-\beta)\rho V_U(\alpha) \quad (20)$$

which generate three equations in three unknowns. Solving we obtain the following estimators:

$$\hat{\alpha} = \tilde{w}(x^{**}, 1) - \tilde{w}(x^{**}, 0) \quad (21)$$

$$\widehat{\rho V_U(\alpha)} = \hat{\alpha} + \tilde{w}(x^*(1), 1) \quad (22)$$

$$\hat{k} = \beta\hat{\alpha} \left[\tilde{w}(x^{**}, 0) - (1-\beta)\widehat{\rho V_U(\alpha)} \right]^{-1} \quad (23)$$

Notice again that since $(\rho, b(\alpha))$ are only jointly identified and they impact the realized distribution of wages and duration only through the discounted value of unemployment $\rho V_U(\alpha)$, we can reparameterize the model accordingly, estimate directly $\rho V_U(\alpha)$ and recover ρ or u_0 from equation (14). For an intuition, observe that, the discontinuity of the wage support identifies the preference for flexibility; given a value of α , the fraction of flexible wages identifies k .

While we do observe workers in both flexibility regimes in the data, we never observe discontinuous wage supports. This is an indication of the presence of more than one type. In other words, the presence of more types “smooths out” the discontinuity in the accepted wage distribution and the degree of this smoothing is the information that allows for the identification of the types by observing their mixture.

Finally, the last crucial piece of information useful for identification is the ordering of wages with respect to regimes implied by the model. In a model with only one type there is no overlap of wages in different regimes: all the wages in flexible jobs are lower than the minimum accepted wage in a non-flexible job. Therefore if the supports of wages at flexible and non-flexible jobs overlap the model implies that at least two types must be present and the amount of the overlap is informative about the proportion and the value of each α_j such that $\alpha_j > k\rho V_U(\alpha_j)$.

5 Estimation

The minimum observed wage is a strongly consistent estimator for the reservation wage⁹. In our model we can exploit this property on observed minimum wages both at flexible and at non-flexible jobs because they refer to the reservation wage of two different types of individuals: the lowest accepted wage at non-flexible jobs is a strongly consistent estimator for the reservation wage of workers’ type such that $\alpha < k\rho V_U(\alpha)$ while the lowest accepted wage at flexible jobs is a strongly consistent estimator for the reservation wage of workers’ type such that $\alpha > k\rho V_U(\alpha)$.

⁹See Flinn and Heckman (1982)

The first step of our estimation procedure is then, by using equation (10), to obtain the following strongly consistent estimators:

$$\begin{aligned}\widehat{\rho V_U(0)} &= \min_{w_i} \{w_i : h_i = 0\} \\ \rho V_U(\widehat{\alpha_j}) - \alpha_j &= \min_{w_i} \{w_i : h_i = 1\}\end{aligned}\tag{24}$$

In the second step we estimate the remaining parameters by Simulated Method of Moments (SMM) where the moments we match are means and standard deviations of wages at flexible and non-flexible jobs over various percentiles defined on accepted wages at non-flexible jobs.¹⁰ To these moments we add the mean and standard deviations of unemployment durations and the amount of overlap of flexible and non-flexible jobs over the same observed wage support. A complete list of the sample and simulated moments is the Appendix. Matching by percentiles and by the proportion of flexible and non-flexible jobs over the same accepted wage support should capture the “smoothed out” discontinuities generated by a model with multiple types as illustrated in the identification section. Formally then, in the second step the estimator is:

$$\begin{aligned}\widehat{\theta} &= \arg \min_{\theta} \Psi(\theta, \mathbf{t}, \mathbf{w}, \mathbf{h})' W \Psi(\theta, \mathbf{t}, \mathbf{w}, \mathbf{h}) \\ \text{where } &: \\ \theta &\equiv \{\lambda, \eta, \mu, \sigma, k, \boldsymbol{\alpha}, \mathbf{p}, \rho V_U(\alpha_{-j})\} \\ \Psi(\theta, \mathbf{t}, \mathbf{w}, \mathbf{h}) &= \left[\Gamma_R \left(\theta | \widehat{\rho V_U(0)}; \rho V_U(\widehat{\alpha_j}) - \alpha_j \right) - \gamma_N(\mathbf{t}, \mathbf{w}, \mathbf{h}) \right]\end{aligned}\tag{25}$$

and where γ_N is the vector of the sample moments obtained by our sample of dimension N while $\Gamma_R \left(\theta | \widehat{\rho V_U(0)}; \rho V_U(\widehat{\alpha_j}) - \alpha_j \right)$ is the vector of the corresponding moments obtained in a simulated sample of dimension R that depends on the vector of parameters θ and on the two parameters estimated in the first step. The weighting matrix in the quadratic form is a diagonal matrix with diagonal elements equal to the inverse of the bootstrapped variances of the sample moments. The parameters (μ, σ) are the parameters of the $G(x)$ distribution that we assume to be lognormal. The lognormal distribution is the most commonly assumed distribution in this literature because it satisfies conditions for the identification of its parameters and it provides a good fit for observed wages distributions.

Finally, in the third step we recover $\mathbf{b}(\alpha)$ by fixing a value for the discount rate ρ and by using the equilibrium equations (14) and (16).

6 Results

The model is estimated separately for women with a High School degree, and women with at least a College degree. Estimated parameters are reported in Table 2. The specification includes three types and it is very similar to the *Example* presented in the Section.4. The

¹⁰In principle, one could attempt a maximum likelihood approach. This is difficult in our model because each type α such that $\alpha > k\rho V_U(\alpha)$ defines a parameter-dependent support over flexible and non-flexible jobs and step 1 allows the estimation of only one such type α . The support of the variables over which the likelihood is defined depends on parameters and therefore a standard regularity condition is violated.

	College	High School
μ	3.5343	3.0107 (0.0192)
σ	0.5378	0.4841 (0.0188)
η	0.0057	0.0136 (0.0000)
λ	0.2288	0.2196 (0.0014)
α_1	0.1035	0.0100 (0.0030)
Prob($\alpha = a_1$)	0.1256	0.2084 (0.0221)
α_2	0.0100	0.0255 (0.0002)
Prob($\alpha = a_2$)	0.2437	0.1641 (0.0415)
k	0.0004	0.0006 (0.00002)
$\rho V_U(0)$	7.0000	3.6500 (0.0000)
$\rho V_U(\alpha_1)$	15.3092	3.9059 (2.7685)
$\rho V_U(\alpha_2)$	2.4100	2.1555 (0.0002)
Loss function	46.561	3.671

Note: Bootstrap standard errors in parentheses.

Table 2: Estimation results

type that only accepts non-flexible jobs has value α_0 normalized to zero. Three types is the minimum number of types generating both flexible and non flexible jobs that overlaps over their wage support and that guarantees smoothness of the accepted earnings distribution. We have attempted to estimate the model with two types and four types but the three-types model guarantees a better fit.

The parameter estimates fit the data very well (see the table in the Appendix). Observe first that arrival rates, termination rates, and the two parameters of the lognormal distribution are comparable to the results obtained in the literature.¹¹ The flexibility-related parameters are more difficult to compare to previous literature, but their values do not seem implausible: on the College sample about 37% of women are willing to pay between 1 and 10 cents an hour to work in flexible jobs and the firms' cost is 0.04% of the hourly potential productivity. On the High School sample, a comparable proportion of women value flexibility but they are willing to pay a lower dollar amount (between 1 and 2.5 cents an hour) while firms face an higher cost of providing it (which corresponds to about 0.04% of the hourly potential productivity). We find it plausible that jobs with lower skill requirements have a higher cost of flexibility: secretarial or manual jobs are often performed in teams and require a higher need for coordinating work-hours among workers than professional jobs.

We find it interesting that the difference between the parameter estimates between High School and College graduates is consistent with the conjecture that women choose schooling to accommodate, at least in part, a preference for job flexibility. Schooling is costly but may give access to jobs where the relative cost of flexibility is lower. This might provide a partial explanation to the puzzle of why women have lower wages than men, but acquire

¹¹See for example Flabbi (2005) and Bowlus (1997).

more schooling.¹²

To further clarify the role of flexibility on labor market outcomes we turn to the computation of counterfactual experiments.

7 Policy Experiments

We present three types of experiments. For each experiments we compute the new equilibrium and use it to generate a sample of wages and unemployment durations which we compare to a sample derived from the parameter estimates reported in Table 2 from Section 6.

7.1 Counterfactual 1: no flexibility

To understand the impact of flexibility, we ask how much the labor market outcomes of women would change if flexibility were not available. To answer this question, the first policy experiments imposes that all the jobs must be non-flexible. The equilibrium in this environment is characterized by only one reservation value for each type

$$x^*(0, \alpha_j) = \rho V_U(\alpha_j) \quad (26)$$

which is computed by solving the fixed point:

$$\rho V_U(\alpha_j) = u(\alpha_j) + \frac{\lambda\beta}{\rho + \eta} \int_{\rho V_U(\alpha_j)} [x - \rho V_U(\alpha_j)] dG(x) \quad (27)$$

The implied hazard rate out of unemployment in equilibrium will be:

$$r(h = 0; \alpha_j) = \lambda \tilde{G}[\rho V_U(\alpha_j)] \quad (28)$$

The results for the first policy are reported in Table 3. The table reports the mean and standard deviation of wages of workers in non-flexible jobs, the average unemployment duration for these workers, and the value of unemployment. All values are normalized as percentages of the corresponding values in the estimated model. For example, the number in the first cell, 98.27, indicates that the average accepted wage in an environment with no flexible jobs available is 98.27% of the average wage over all types in the benchmark model.

The policy implies a slightly lower value of participating in the market (i.e. the value of unemployment) relative to the benchmark for women that value flexibility (i.e. the types α_1 and α_2). This reduction is modest but has a significant impact on labor market outcomes. The average wages for types that value flexibility is reduced considerably: ranging from 15.9% of the average wage in the benchmark model for the α_1 -type in the College sample to 83.6% for the α_1 -type in the High School sample. This is because workers accepting flexible jobs in the benchmark model have lower productivities (given α) than workers accepting non-flexible job. When the option of accepting flexible jobs is taken away, some of these

¹²This empirical evidence has recently received some attention but the main explanations proposed so far have been concentrated on the positive returns in the marriage market (Chiappori, Iyigun and Weiss 2006 and Ge 2008).

	College				High School			
	All types	α_0	α_1	α_2	All types	α_0	α_1	α_2
$E(w h=0)$	98.27	100	15.91	82.61	94.39	100	83.61	45.22
$SD(w h=0)$	102.26	100	32.88	104.94	96.19	100	105.14	103.73
$r(h=0)$	123.80	100	1,411,683	142.92	128.86	100	150.97	1,555
ρV_U		100	99.58	99.92		100	99.96	99.33

Table 3: No flexibility (benchmark model=100)

workers accept non-flexible jobs, thus lowering the conditional mean wage. Accordingly, the reservation value to accept a non-flexible job in the counterfactual is the new discounted value of unemployment $\rho V_U(\alpha_j)$ instead of the ratio α_j/k as in the benchmark model. This also implies an increase of the hazard rate from unemployment to non-flexible jobs.¹³ However, the overall hazard rate out of unemployment for the α_1 and α_2 types does not increase because these workers do not have the option of transiting to flexible jobs anymore. Overall the impact of the presence of flexibility seems quite substantial both on the College sample and on the High School sample. It is interesting to note that the simple presence of flexible jobs in the economy reduces the wage differentials at non-flexible jobs: this occurs without recurring to the usual explanations in terms of human capital accumulation or discrimination.

7.2 Counterfactual 2: reduction to the cost of flexibility at zero cost to workers

The second and third experiment consider policies that ease the provision of flexible jobs by reducing their cost. This cost reduction may be due to spillovers from technological changes and therefore have no direct cost or may result from an explicit public policy financed by taxation. In this subsection we consider the reduction of k in half from technological progress that bears no cost to workers.

In this case, the α_0 -type is unaffected while the α_1 and α_2 types are affected because their labor market outcomes and endogenous reservation values depend on the cost of providing flexibility. We compute the equilibrium at the new k using equation (14). The hazard rates for α_1 and α_2 are:

$$r(h=1; \alpha_j) = \lambda \left[G\left(\frac{\alpha_j}{k}\right) - G\left(\frac{\rho V_U(\alpha_j) - \alpha_j}{1-k}\right) \right] \quad (29)$$

$$r(h=0; \alpha_j) = \lambda \tilde{G}\left(\frac{\alpha_j}{k}\right) \quad (30)$$

The results for this second policy experiment are reported in Table 4. The average and standard deviation of the wage distribution, and the hazard rates are now reported conditional on both flexibility regimes $h=0$ and $h=1$. Results show a substantial impact, with average wage increases on the relevant types between 0.4 and 51% on flexible jobs.

¹³The increase for the α_1 -type in the College sample is huge. This result is due to the fact that the reservation wage to accept a non-flexible job for this type of worker in the benchmark model is very high generating an extremely low hazard rate.

	College				High School			
	All types	α_0	α_1	α_2	All types	α_0	α_1	α_2
$E(w h=0)$	103.03	100	172.22	147.96	98.90	100	149.34	177.75
$E(w h=1)$	96.99	-	100.43	151.40	114.38	-	140.32	108.34
$SD(w h=0)$	109.70	100	102.11	98.95	103.32	100	102.54	100.4
$SD(w h=1)$	81.88	-	101.07	237.11	120.03	-	238.58	135.50
$r(h=0)$	85.45	100	0.24	31.73	85.06	100	23.46	2.46
$r(h=1)$	161.10	-	100.01	259.07	151.76	-	250.14	106.70
$\tilde{\rho}V_U$		100	100.01	100.13		100	100.08	100.06

Table 4: Half flexibility cost at zero cost to workers (benchmark model = 100)

Notice that through the equilibrium effects there is a substantial impact not only at flexible jobs but also on the realized distribution of accepted earnings at non-flexible jobs: they increase between 48 and 78% with respect to the benchmark model. The hazard rate from unemployment to flexible jobs increases because the acceptable support is much larger. This result depends on parameter since both the upper bound $\tilde{w}(x^{**}, 1; \alpha)$ and the lower bound $\tilde{w}(x^*(1), 1; \alpha)$ increase. The overall hazard rate out of unemployment for types α_1 and α_2 is also increasing because the higher hazard to flexible jobs more than compensate the lower hazard to non-flexible jobs. Again the policy shows a significant impact on relevant labor market outcomes for both College and High School workers: as expected the impact on High School workers is lower than the impact on College workers.

7.3 Counterfactual 3: reduction to the cost of flexibility financed by lump-sum tax

In the third experiment we consider the reduction in the flexibility cost financed by a lump-sum tax on all workers. In this case all types of workers are affected. The new wage schedule will be the result of bargaining over the following surplus:

$$S(x, w, h; \alpha, k) = \frac{1}{\rho + \eta} [w - t + \alpha h - \rho V_U(\alpha)]^\beta [(1 - k'h)x - w]^{(1-\beta)} \quad (31)$$

leading to the following wage schedule:

$$\tilde{w}(x, h) = \beta(1 - k'h)x + (1 - \beta)[\rho V_U(\alpha) + t - \alpha h] \quad (32)$$

The value of unemployment equations necessary to compute the reservation values will then be, for α_0 :

$$\rho V_U(\alpha_0) = u(\alpha_0) + \frac{\lambda\beta}{\rho + \eta} \int_{\rho V_U(\alpha_0) + t} [x - \rho V_U(\alpha_0) - t] dG(x) \quad (33)$$

and for α_1, α_2 :

$$\begin{aligned} \rho V_U(\alpha_j) &= b(\alpha_j) + \frac{\lambda\beta}{\rho + \eta} \int_{\frac{\alpha_j}{1-k}}^{\frac{\alpha_j}{k}} \left[x - \frac{\rho V_U(\alpha_j) + t - \alpha_j}{1-k} \right] dG(x) \\ &\quad + \frac{\lambda\beta}{\rho + \eta} \int_{\frac{\alpha_j}{k}}^{\alpha_j} [x - \rho V_U(\alpha_j) + t] dG(x) \end{aligned} \quad (34)$$

For types α_1 and α_2 , only the hazard rate from unemployment to flexible jobs is affected and it will be equal to:

$$r(h=1; \alpha_j) = \lambda \left[G\left(\frac{\alpha_j}{k}\right) - G\left(\frac{\rho V_U(\alpha_j) + t - \alpha_j}{1-k}\right) \right] \quad (35)$$

For type α_0 the new hazard rate to non-flexible jobs reflects the new reservation value:

$$r(h=0; \alpha_j) = \lambda \tilde{G} [\rho V_U(\alpha_0) + t] \quad (36)$$

Finally, to complete the experiment we have to compute the endogenous value of the tax t which depends on the realized equilibrium distribution of accepted wages and on how they are distributed over flexible and non-flexible jobs. We will make use of the fact that the endogenous unemployment rate in steady state is equal to:

$$\begin{aligned} u(\alpha_0) &= \frac{\eta}{r(h=0, \alpha_0) + \eta} \\ u(\alpha_j) &= \frac{\eta}{[r(h=0, \alpha_j) + r(h=1, \alpha_j)] + \eta}; \alpha_j = \alpha_1, \alpha_2 \end{aligned} \quad (37)$$

Then consider that the total expense (TE) is the cost times the measure of employed in flexible jobs:

$$TE = (k - k') [(1 - u(\alpha_1)) p_1 + (1 - u(\alpha_1)) p_2] \quad (38)$$

while the total tax TT is paid by all employed workers

$$TT = t [(1 - u(\alpha_0)) p_0 + (1 - u(\alpha_1)) p_1 + (1 - u(\alpha_2)) p_2] \quad (39)$$

therefore:

$$t = \frac{TE}{TT} \quad (40)$$

which is an implicit function of t since the equilibrium unemployment rate also depends on t .

The results of this third experiment are reported in Table 5. The impact on types α_1 and α_2 is very similar to the one in the second experiment: the tax generates an extremely modest change in labor market outcomes with respect to the second experiment because the cost of flexibility is very low and therefore the tax required to finance it is very low. This is also the reason why the impact on the α_0 -type is almost insignificant. However, differently from the second experiment when the change is financed by taxation there is no Pareto improvement because type α_0 workers pay taxes without receiving any benefit. To see if their welfare loss is compensated by welfare gains on the other two types we could use

	College				High School			
	All	α_0	α_1	α_2	All	α_0	α_1	α_2
$E(w h=0)$	102.98	99.95	172.22	147.96	98.85	99.94	149.41	176.44
$E(w h=1)$	96.99	-	100.43	151.40	114.81	-	140.65	108.89
$SD(w h=0)$	110.80	101.29	102.11	98.95	104.24	101.8	102.46	100.24
$SD(w h=1)$	81.88	-	101.07	237.11	120.66	-	238.32	136.46
$r(h=0)$	85.45	100.00	0.24	31.73	85.06	100.00	23.46	2.46
$r(h=1)$	161.10	-	100.01	259.07	151.76	-	250.14	106.70
ρV_U		100.00	100.01	100.12		100.00	100.07	100.05

Table 5: Half flexibility cost financed by lump-sum tax (benchmark model = 100)

the value of unemployment $V_U(\alpha)$. This value can be considered a welfare measure because it is the present discounted value of participating in the market. In the bottom row of the table we see that the α_1 types experience a .01% increase the α_2 types a .12% increase on the College sample and a .07% and .05% increase in the High School sample. The α_0 type seems in both cases unaffected. It actually is affected but the loss is in the order of the .0001% and it does not show up in the rounded value of index reported. Therefore the policy produces tangible benefits for types with preference for flexibility imposing a negligible cost on other types.

The main conclusion we draw from these policy experiments is that the impact of flexibility on labor market outcomes is significant and that policies aimed at reducing the cost of its provision have the potential of increasing average wages and therefore possibly reducing the gender wage gap.

8 Conclusion

Because of the difficulties in estimating preference parameters using a standard approach, there has been little research on the effect of the availability of flexibility on women's labor market outcome. In this paper, we have narrowly defined flexibility as the availability of part-time work, and shown that women value this amenity significantly. Because the availability of part-time is only one aspect of flexibility, more precise data on job characteristics may refine our estimates.

Our estimates and counterfactual experiments reveal that the impact of flexibility on labor market outcomes for women is significant: without flexibility, the average wage of workers types that value flexibility would be between 75% and 17% lower. On the other side, policies that reduce the cost of flexibility increase average wages both at flexible and non-flexible jobs showing their potential to substantially reduce the gender wage gap.

We also find an asymmetry in the flexibility parameters between College graduates and High School graduates. College graduates value more flexibility and work in jobs with a lower cost of providing it. We speculate that this evidence is consistent with a behavior where women choose schooling to accommodate a preference for job flexibility. Such behavior may explain the main puzzle of the recent data on gender differentials: women experiencing a negative wage differential but a positive schooling differential with respect to men. We

consider extending our model to investigate these implications a promising tool for future research.

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A Appendix

The following table illustrates the moments in the data (even columns), and simulated moments at the estimated parameter values (odd columns). The moments that are being matched are: Mean (columns 1 and 2) and standard deviation (columns 3 and 4) of wages of workers in non-flexible jobs, fraction of workers in flexible jobs (columns 5 and 6), Mean (columns 7 and 8) and standard deviation (columns 9 and 10) of wages of workers in flexible jobs. Quintiles are defined using percentiles 0, 20, 40, 60, 80, and 100 of the non-flexible workers' wage distribution. Because some quintiles may not display any worker in flexible jobs for some parameter values, means and standard deviations in columns 7 through 10 are multiplied by the corresponding fraction of workers in flexible job (except for the row displaying moments for all workers).

	1	2	3	4	5	6	7	8	9	10
College										
All	23.715	23.410	11.302	10.360	0.191	0.200	21.836	22.490	12.784	14.152
Quintile 1	12.297	12.032	1.976	2.273	0.311	0.311	3.495	3.447	2.491	2.470
Quintile 2	16.858	17.085	1.124	1.106	0.118	0.122	2.020	2.131	1.798	1.911
Quintile 3	21.141	21.134	1.270	1.352	0.128	0.071	2.701	1.528	2.374	1.469
Quintile 4	26.587	26.574	1.857	2.080	0.163	0.190	4.368	5.037	3.683	4.144
Quintile 5	39.222	39.910	7.783	8.196	0.197	0.195	7.819	8.021	6.483	6.714
High School										
All	13.933	13.879	6.097	5.923	0.218	0.219	10.512	10.294	3.918	4.279
Quintile 1	7.321	7.532	1.179	1.253	0.379	0.369	2.744	2.765	1.768	1.798
Quintile 2	10.301	10.091	0.718	0.731	0.276	0.277	2.757	2.769	2.008	2.026
Quintile 3	12.718	12.735	0.736	0.770	0.145	0.144	1.846	1.843	1.590	1.609
Quintile 4	15.640	15.559	1.004	1.139	0.146	0.144	2.273	2.223	1.956	1.945
Quintile 5	22.452	22.392	3.974	4.137	0.089	0.084	1.760	1.780	1.622	1.703