Workplace Flexibility in an Equilibrium Search Model

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Abstract

Economists have documented a positive relationship between workplace flexibility and wages despite the ambiguous relationship between flexibility and wages. This paper utilizes an equilibrium model to understand the benefits (or costs) of workplace flexibility to both workers and firms by considering three potential channels driving the positive relationship between wages and workplace flexibility: worker utility, firm productivity, and firm costs. We are able to estimate the flexibility parameters for utility, productivity, and cost with little data requirements; the model is estimated on data from the American Time Use Survey's Leave and Jobs Flexibility Module conducted in 2017 and 2018. Two dimensions of workplace flexibility are considered in this analysis: flexibility in schedule and in location. The results suggest that the observed positive relationship between wages and flexibility are driven by productivity increases and cost savings of a flexible workforce.

Keywords: workplace flexibility, equilibrium search model, gender differences

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1 Introduction

Economists have documented a positive relationship between workplace flexibility and wages (Mas and Pallais, 2020; Maestas et al., 2018; Arntz et al., 2022). Theoretically, the relationship between flexibility and wages is ambiguous. On one hand, the theory of compensating wage differentials predicts that workers with job amenities (i.e. flexibility) should experience lower wages (Rosen, 1986). On the other hand, workplace flexibility could increase the productivity of workers through longer hours or reduce the costs to firms through less office space (Bloom et al., 2015; Noonan and Glass, 2012; Golden, 2001).

This paper utilizes an equilibrium model to understand the benefits (or costs) of workplace flexibility to both workers and firms by considering three potential channels driving the positive relationship between wages and workplace flexibility. First, workers may consider flexibility a disamenity and need to be compensated for it by higher wages. The literature is mixed as to whether workers value flexibility or not.[1] Second, firms may find that workers with flexibility are more productive. Without potential distractions from coworkers or with more time to spend at work by not commuting, flexible workers may be more productive than their inflexible counterparts. Third, firms may enjoy cost savings with flexible workers. The intuition for this channel aligns better with location flexibility; if companies allow working from home, there are less overhead costs associated with office buildings, desks, and energy. However, we could find that increased flexibility leads to costly monitoring from firms.

The model follows an equilibrium search framework, in which the labor market is characterized by search frictions (see Rogerson et al. (2005) for a survey on search-theoretic labor models

[1] Papers that find flexibility is valued include Golden et al. (2013); Eriksson and Kristensen (2014); Bloom et al. (2015); Bryson and MacKerron (2017); Mas and Pallais (2017); Wiswall and Zafar (2018); Maestas et al. (2018); He et al. (2021). Papers to the contrary include Kossek and Van Dyne (2008) and Kaur et al. (2015)

and Eckstein and van den Berg (2007) for a survey on the use of search models in empirical labor economics research). In the model, workers preferences for flexibility are unrestricted, so that we can test whether flexibility is an amenity (utility enhancing) or a disamenity (utility reducing). Firms are defined by their flexibility provision, which impacts profits through both worker productivity and costs. Similar to the worker-side, we impose no restrictions on the productivity and cost parameters. The equilibrium wage function shows the ambiguous relationship between wages and flexibility. There are two channels to achieve the positive relationship observed in the data; either the marginal productivity of flexibility is sufficiently greater than the marginal cost of provision, or the utility gain of flexibility is low or even negative.

We are able to estimate the flexibility parameter for utility, productivity, and cost with little data requirements; the model is identified with workers wage and flexibility status, and unemployment duration of the unemployed individuals. The model is estimated on data from the American Time Use Survey's Leave and Jobs Flexibility Module conducted in 2017 and 2018. With this data, we are able to observe workers wages, the provision of workplace flexibility at their current position, and the duration of unemployment for unemployed individuals. Two dimensions of workplace flexibility are considered in this analysis: flexibility in schedule and in location. Schedule flexibility refers to the worker's ability to make changes in their work schedule, such as changing start and end times, and location flexibility refers to the worker's ability to work from home. In order to estimate three flexibility parameters using one measure of flexibility in the data, we calibrate the model with values in the literature.

The model is estimated on individuals with different levels of human capital. The positive relationship between wages and flexibility are driven by productivity increases for highly educated individuals, and these individuals do not demonstrate a utility benefit to flexibility. Low educated women enjoy flexibility the most and have large productivity increases with flexibility. Low educated men dislike some flexibility and it is costly to provide with little productivity gain to the firm.

The paper is structured as follows: the literature is reviewed in Section 2 and the model is presented in Section 3. Identification is discussed in Section 4, and data is described in Section 5 prior to presentation of the results in Section 6. Section 7 concludes.

2 Literature Review

According to the theory of compensating wage differentials, any wage differences that arise in the labor market are equalized through the non-pecuniary characteristics of the job.[2] In a perfectly competitive labor market of workers heterogeneous in preferences for non-pecuniary characteristics and firms heterogeneous in the provision of these characteristics, an equilibrium exists such that utility maximizing workers match with a profit maximizing firm at the jointly optimal compensation package. The observed labor market equilibrium provides a distribution of wage-amenity packages that have an equal implicit, or "hedonic," compensation level. Data on a worker's wage and amenities allows us to estimate the hedonic wage equation in which we can test the theory of compensating wage differentials.[3] The hedonic wage equation extends the Mincerian earnings function to regress wage on both individual and job characteristics, with a negative expected sign on "good" job amenities (implying a trade-off) and a positive expected sign on "bad" job amenities

[2] The idea of equalized differences was introduced by Adam Smith in the Wealth of Nations (Volume 1, Chapter X), formalized by Friedman and Kuznets (1954), and summarized by Rosen (1986) in the Handbook of Labor Economics. The summary of the theory presented here comes from Rosen's explanation.

[3] Rosen (1974) introduces the hedonic equation methodology to explore prices and product differentiation, but the methodology was adopted quickly by labor economists to study compensating wage differentials; see Rosen (1986) for a survey of the early literature.

(implying a wage compensation).

The hedonic wage equation framework was created under the assumptions of a perfectly competitive labor market with workers heterogeneous only in their preference for non-pecuniary job characteristics and firms heterogeneous only in the cost of these characteristics. Many of these assumptions do not hold. First, many have argued that the labor market is characterized by search frictions instead of being perfectly competitive (see Rogerson et al. (2005) for a survey of the search literature). If there are search frictions in the labor market, the observed wage-amenity equilibrium does not resemble worker preferences (Hwang et al., 1998). Second, workers may be heterogeneous in their productivity as well as their preferences, which would bias the marginal willingness to pay results of a hedonic wage estimation (Hwang et al., 1992). Additionally, the hedonic wage framework can only tell us the relationship between wages and job characteristics; we are unable to disentangle the reason why that relationship exists (i.e., worker preferences or firm costs).

Indeed, search models have been successful in characterizing worker preferences for job amenities when there is unobserved heterogeneity. In a partial equilibrium model, Bonhomme and Jolivet (2009) show that hedonic wage estimations of compensating wage differentials understate the strong preference workers have for amenities. Only when search frictions are very low will the hedonic wage equation accurately estimate the worker's marginal willingness to pay for amenities. In an on-the-job search model, Sullivan and To (2014) show that worker preferences for non-pecuniary job characteristics influence job transitions. Previous search models with compensating wage differentials have focused on the utility or labor market equilibrium effects of amenities. To the best of my knowledge, this is the first paper to estimate the firm productivity and cost of non-pecuniary amenities in a search model.

The job amenity explored in this paper is workplace flexibility. The literature on workplace flexibility uses three definitions of flexibility. First is hours flexibility answering the question "How many hours should I work?". Early models of workplace flexibility focused on hours flexibility through the intensive margin, often simplified into part-time (less than 35 hours a week) versus full-time work (more than 35 hours a week) driven by data restrictions or empirical simplification. Flabbi and Moro (2012) characterize women's preferences for hours flexibility in a search model defining flexibility with the intensive margin; this paper extends their analysis by using richer measures of workplace flexibility.

The second definition of flexibility is schedule flexibility answering the question "How should I allocate my work hours across the workday or work week?". The compensating differentials of schedule flexibility have been studied within the context of single industries with conflicting conclusions. For example, professionals with high incomes and high education are able to enjoy greater schedule flexibility without wage penalties (Goldin and Katz, 2011), while schedule flexibility for stock brokers, a high-contact industry, leads to overwork and decreased hourly wages (Blair-Loy, 2009).

The third definition of flexibility is location flexibility answering the question "Should I work at the office or from home?". There has been an increasing instance of location flexibility, also known as teleworking, in the United States due to technological advances since the 1980s and an even greater interest in telework policies since the COVID-19 pandemic (Oettinger, 2011; Bick et al., 2021; Dey et al., 2020; Mongey et al., 2021).

This paper focuses on schedule and location flexibility, which can impact a worker's utility, a firm's productivity and firm costs. These three channels lead to an ambiguous relationship between wages and workplace flexibility. If workers value flexibility, compensating wage differentials predict a negative relationship between wages and flexibility. Due to evidence of greater worker satisfaction in surveys and stated preferences in experiments (Golden et al., 2013; Eriksson and Kristensen, 2014; Bloom et al., 2015; Bryson and MacKerron, 2017; Wiswall and Zafar, 2018; Maestas et al., 2018; He et al., 2021), we might expect a negative relationship between workplace flexibility and wages when estimating hedonic wage models. Indeed, a discrete choice experiment showed that workers are willing to pay for flexibility (Mas and Pallais, 2017). However, the relationship between workplace flexibility and wages is in the opposite direction (Mas and Pallais, 2020; Pabilonia and Vernon, 2020; Arntz et al., 2022).

Assuming workers value flexibility, the positive relationship may be driven by productivity or firm costs. The increasing incidence of telework from 1980s to 2000s has been attributed to technological advances, suggesting that firms do not face a trade-off between worker productivity and flexibility (Oettinger, 2011). Indeed, case studies have shown that telework leads to increased productivity in both quantitative (number of calls in Bloom et al. (2015); number of patents in **linos˙when˙2019**) and qualitative measures (supervisor satisfaction of performance in Angelici and Profeta (2020)). Moreover, workers with schedule flexibility and location flexibility report working longer hours, an admittedly imprecise measure of productivity (Golden, 2001; Noonan and Glass, 2012). In addition to increasing productivity, workplace flexibility could be decreasing the firm's costs and, in turn, increasing wages. Although there may be some coordination cost to a flexible workforce (Kossek and Van Dyne, 2008), these are likely offset by other cost-saving effects. When allowing for location flexibility, firms can experience lower overhead and capital costs (Bloom et al., 2015). Indirectly, employees who enjoy workplace flexibility have lower turnover (Bloom et al., 2015; Beckmann, 2016; Angelici and Profeta, 2020).

Although we would expect a negative relationship between workplace flexibility and wages due to worker preferences, the benefits to the firm could be causing the observed positive relationship. The equilibrium search model presented in this paper disentangles the three channels to determine to what extent worker utility, firm productivity, and firm costs cause the positive relationship between wages and workplace flexibility.

The model presented in this paper is estimated on four sub-samples of the data, separated by gender and educational attainment. The separate estimations imply heterogeneity in parameters governing not only the labor market each group faces, but also their preferences for flexibility. Women may have a higher preference for flexibility as shown by greater willingness to pay for the option to work from home or to work part-time (Mas and Pallais, 2017; Wiswall and Zafar, 2018). Indeed, one explanation for the gender wage gap is that women are sorting into jobs with greater flexibility and lower pay (Goldin and Katz, 2011). Therefore, it is reasonable to assume that the flexibility parameters will vary by gender. Additionally, the flexibility parameters can depend on educational attainment. On one hand, workers with a college degree are more likely to have alternative work arrangements, like flexibility in their schedule or work location (Mas and Pallais, 2020). On the other hand, it may be more difficult to substitute between workers in high-skilled jobs, making flexibility more costly (Goldin, 2014).

3 Model

This paper presents a search model in stationary, continuous time.[4] There are two types of agents in the model: individuals, denoted i, and firms, denoted j, who share a common discount factor ρ. Individuals i who are employed enjoy linear utility $u(w, f; \gamma) = w + \gamma f$, and those who are

[4]See Eckstein and van den Berg (2007) for a survey of the literature using search models to answer empirical labor economics questions.

unemployed experience flow (dis)utility b. To allow for flexibility to be valued as either an amenity or disamenity to the worker, the utility weight of flexibility, γ, is unrestricted.

Firms are endowed with flexibility level $f \in \mathbb{F} = \{0, 1, 2, ...F\}$ in which they offer employees flexibility f. The flexibility level is some ordinal measure of workplace flexibility. One potential ordering could be the ability to work from home one day a week ($f = 1$), two days a week ($f = 2$), all the way up to the full week ($f = 5$); another ordering would be the ability to change schedules if given permission ($f = 1$), and the ability to define your own schedule ($f = 1$). The provision of flexibility level f costs $c(f)$ where the only assumption on the cost function is that $c(0) = 0$. This allows for flexibility to either have a positive cost to firms (i.e., cost of monitoring a remote workforce) or a negative cost (i.e., savings from not needing an office building). The probability of a firm being type f is p_f where $p_f > 0\ \forall f$ and $\sum_{f=0}^{F} p_f = 1$.[5] Firms have a production function $y(x, f)$ of some numeraire good and maximize profits $\pi(x, f)$ subject to the cost of labor w and the cost of providing flexibility $c(f)$, thus their profits are $\pi(x, f) = y(x, f) - w - c(f)$. We assume a production function $y(x, f) = \zeta^f x$, where ζ is any positive number; thus, flexibility could decrease ($\zeta \in (0, 1)$), have no impact ($\zeta = 1$), or increase ($\zeta \in (1, \infty)$) the productivity of workers.

The labor market is characterized by Poisson processes that model search frictions. Unemployed individuals meet firms following Poisson process with parameter λ. With probability p_f they have met with a firm of type f and draw match-specific productivity $x \sim G(x)$.[6] After observing the match-specific productivity, the wage w is determined by Nash bargaining with parameter

[5]Firms are set in their flexibility provision based on external constraints, such as production technology, industry standards, etc. If we wanted to endogeneize the firm's flexibility provision, we would need to restrict the analysis to a certain industry and/or occupation that could be conducted at the workplace and at home. While a very interesting question, this analysis is currently outside the scope of this paper.

[6]In this model, workers do not engage in directed search, and the distribution of match-specific productivity does not depend on firm type. An extension could include worker heterogeneity in preferences for flexibility and directed search.

α. Employed workers face a termination shock following a Poisson process with parameter η.

The model allows for workplace flexibility to impact both workers and firms, but does not make any assumptions as to whether flexibility is a benefit or drawback. Workers experience some utility benefit or reduction from matching with a firm with some flexibility level. For simplicity, this utility parameter interacts with flexibility linearly.[7] As flexibility enters the firm problem in two places, we must introduce an exogenous process for the distribution of firm types in order to estimate the productivity and cost of flexibility. If we were to allow firms to determine their optimal flexibility provision, where marginal benefit equals marginal cost, we would have infinitely many solutions without setting either the cost or the productivity gain.

The value of unemployment takes into account the flow (dis)utility of being unemployed b and the potential for meeting an employer with probability λ characterized by flexibility level f with probability p_f. When an employee and employer meet, the match-specific productivity x is drawn from the distribution G, wages are determined through Nash bargaining, and the employee decides whether to accept the offer and receive the value of employment $W(w(x,f))$ or to reject the offer and receive the value of unemployment U in the next period. Thus, the value of unemployed individuals is given by

$$U = b\Delta t + \frac{1}{1+\rho\Delta t}\left((1-\lambda\Delta t)U + \lambda\Delta t\sum_f p_f \int \max\{U, W\left(w(x,f),f\right)\}dG(x) + o\Delta t\right)$$

in discrete time and

$$U = \frac{1}{\rho+\lambda}\left(b + \lambda\sum_f p_f \int \max\{U, W\left(w(x,f),f\right)\}dG(x)\right) \tag{1}$$

[7]Given estimation on binary flexibility, a linear specification would be equivalent to allowing for some curvature in flexibility; i.e., $u(w,f;\gamma) = w + f^{\gamma}$.

in continuous time.

The value of employment is the sum of the flow linear utility in wage and the probability of termination η times the value of unemployment U scaled by the sum of the discount rate ρ and probability of termination η. Thus, the value of employed workers is given by

$$W(w,f) = (w+\gamma f)\Delta t + \frac{1}{1+\rho\Delta t}\left((1-\eta\Delta t)W(w,f) + \eta\Delta t U + o\Delta t\right)$$

in discrete time and

$$W(w,f) = \frac{1}{\rho+\eta}(w+\gamma f+\eta U) \tag{2}$$

in continuous time.

When employers and employees meet, the match-specific productivity x is drawn from distribution $G(x)$ and observed by both parties. The wages are determined by Nash bargaining; the wage maximizes the worker surplus and firm surplus of the match weighted by the bargaining parameter α.

$$\begin{aligned}
w^* &= \arg\max_w \left(W(w,f)-U\right)^{\alpha}\left(y(x,f)-w-c(f)\right)^{1-\alpha} \\
\implies w^*(x,f) &= \alpha\left(y(x,f)-c(f)\right)+(1-\alpha)\left(\rho U-\gamma f\right) \\
&= \rho U-\gamma f+\alpha\left(y(x,f)-c(f)+\gamma f-\rho U\right)
\end{aligned} \tag{3}$$

The relationship between wages w and flexibility f is ambiguous. Holding match-specific productivity constant, we see wages increasing in flexibility if the firm's surplus of providing flexibility is greater than the worker's surplus of having flexibility, which can happen in two ways: if the productivity gain of flexibility ζ is very high relative to the marginal cost of providing flexibility, or if the utility gain from flexibility γ is very low or even negative. As we have seen that wages are increasing in flexibility, the question now is whether this is driven by productivity gains to the firm or flexibility being a disamenity to the worker.

We can determine the reservation value of productivity x when firms and individuals meet by finding the productivity where individuals are indifferent on accepting the offer ($W(x,f) - U = 0$) and firms satisfy the zero profit condition ($\pi(x,f) = 0$). This occurs at

$$\begin{aligned} y(x^R, f) &= c(f) + \rho U - \gamma f \\ x^R &= \frac{1}{\zeta^f}\left(c(f) + \rho U - \gamma f\right) \end{aligned} \tag{4}$$

Because there is a one-to-one relationship between wage w and match-specific productivity x, we can alternatively find the reservation wage w^* at

$$w^R(f; \rho U) = \rho U - \gamma f \tag{5}$$

The wage equation shows the relationship between wages and an amenity predicted by the theory of compensating wage differentials. If flexibility is valued ($\gamma > 0$), then we see the trade-off between wages and flexibility. However, if flexibility is not valued, ($\gamma < 0$), workers will have to be compensated in wages for a job with flexibility.

Rearranging to the wage equation (3), we see that the optimal wage schedule provides workers with their reservation value ($\rho U - \gamma f$) plus an α portion of the sum of the surplus to the firm ($y(x,f) - c(f)$) and the surplus to the worker ($\gamma f - \rho U$).

After combining equations 1, 2, 3, the value of unemployment is given by

$$U = \left(\rho + \lambda + \frac{\alpha\rho\lambda}{\rho+\eta}\right)^{-1}\left(b + \frac{\alpha\lambda}{\rho+\eta}\sum_{f=0}^{F} p_f\left(\int_{x^*} y(x,f)dG(x) - c(f)\right)\right) \tag{6}$$

If we let production function be $y(x,f) = \zeta^f x$, the value of unemployment becomes

$$U = \frac{b + \frac{\alpha\lambda}{\rho+\eta}\sum_{f=0}^{F} p_f\left(\int_{\frac{1}{\zeta^f}(c(f)+\rho U-\gamma f)} \zeta^f x dG(x) - c(f) + \gamma f\right)}{\rho + \lambda + \frac{\alpha\rho\lambda}{\rho+\eta}} \tag{7}$$

Given the distribution of firm types, $\{p_f\}_{f=0}^{F}$, and the production function $y(x,f) = \zeta^f x$, the equilibrium of the model is the set of parameters $\Omega = \{\lambda, \eta, \rho, b, \gamma, \zeta, \{c(f)\}_{f=0}^{F}\}$ that solves equation 7.

4 Identification

In this section, we discuss the identification strategy and the data requirements to estimate the model. We need data on the accepted wage distribution of employed individuals, the level of flexibility at their current job, and the duration of the unemployment spell of unemployed individuals. With this data, the model will be estimated by maximum log-likelihood.

Prior to discussion of the likelihood functions, we state the assumptions necessary for identification. Following C. Flinn and Heckman, 1982, we use a strongly-consistent estimator of the minimum value and assume a recoverable distribution of the match-specific productivity, $G(x)$; the distribution is assumed to be log-normal with location parameter μ and scale parameter σ with ρU set by the minimum observed wage. The only restriction on the cost function is that there no cost if the firm does not provide flexibility, $c(0) = 0$; thus, we will let the cost function be linear, that is

$c(f) = cf$. Following the literature, we set bargaining parameter $\alpha = 0.5$.[8]

One data requirement is the accepted wage distribution of employed individuals, $\{w_i\}_{i\in E}$, which gives the distribution of wages conditional on a match being formed. Following Bayes' Rule, the conditional distribution can be written as the joint distribution of a wage and a match over the probability of a match. Because the firm's production function is linear in x, $y(x, f) = \zeta^f x$, there is a bijection between wage w and productivity x.

$$
\begin{aligned}
w(x, f) &= \alpha\left(\zeta^f x - cf\right) + (1-\alpha)(\rho U - \gamma f) \\
\implies x(w, f) &= \frac{1}{\alpha\zeta^f}\left(w + \alpha cf - (1-\alpha)(\rho U - \gamma f)\right) \sim G(x)
\end{aligned}
$$

Given the distribution of match-specific productivity, $x \sim G(x)$, we know that the probability of a wage and match is given by the numerator of equation 8. The observed wages are conditional on a match being made; the equilibrium equation 7 tells us that the reservation productivity is $x_f^* = \frac{1}{f}(\rho U + c(f))$, so the the denominator of equation 8 is the complement of the cumulative distribution function.

$$
\begin{aligned}
\Pr(wage|match) &= \frac{\Pr(wage \cap match)}{\Pr(match)} \\
&= \frac{\frac{1}{\alpha\zeta^f} g\left(\frac{1}{\alpha\zeta^f}\left(w + \alpha cf - (1-\alpha)(\rho U - \gamma f)\right)\right)}{1 - G\left(\frac{1}{\zeta^f}(\rho U + cf - \gamma f)\right)}
\end{aligned}
\tag{8}
$$

Second, we need to determine the probability of being employed, which can be derived by the steady-state assumption. First, we want to find the hazard rate out of unemployment, which is the

[8] Due to identification issues, the literature has traditionally set the bargaining parameter at one-half. C. J. Flinn et al., 2018 was the first to estimate the bargaining parameter by using personality traits in an intra-household bargaining model. As the question of bargaining is tangential to this research, we will maintain the assumption that the bargaining parameter is set to one-half.

joint probability of meeting with a firm and matching with the firm. Unemployed individuals meet with the firm at rate λ and match with a firm of type f if the match-specific productivity draw is greater than the reservation value $x_f^* = \frac{1}{\zeta f}(\rho U + c(f) - \gamma f)$. Equation 9 gives us the hazard rate out of unemployment.

$$\begin{aligned} h &= \Pr(meet) \times \Pr(match) \\ &= \lambda \times \sum_{f=0}^{F} p_f \left(1 - G\left(\frac{1}{\zeta f}(\rho U + cf - \gamma f)\right)\right) \end{aligned} \tag{9}$$

We find the probability of being employed from the fact that the flow of hired workers minus the flow of fired workers equals zero, and is given in equation 10.

$$\Pr(employed) = E = \frac{h}{h+\eta} \tag{10}$$

Therefore, the likelihood contribution of the employed individuals is given by equation 4.

$$\Pr(wage|match) \times \Pr(employed) = \frac{\frac{1}{\alpha\zeta f} g\left(\frac{1}{\alpha\zeta f}(w + \alpha cf - (1-\alpha)(\rho U - \gamma f))\right)}{1 - G\left(\frac{1}{\zeta f}(\rho U + cf - \gamma f)\right)} \times \frac{h}{h+\eta}$$

The likelihood contribution of unemployed individuals is the product of the probability of observing the on-going unemployment duration, t, and the probability of being unemployed. We assume an exponential distribution of on-going unemployment duration data following Flabbi, 2010, therefore the probability of observing a given unemployment duration is given by he^{-ht}.

Following the logic for the probability of being employed, we find the probability of being unemployed from the fact that the flow of fired workers minus the flow of hired workers equals zero, as shown in equation 11.

$$\Pr(unemployed) = U = \frac{\eta}{h+\eta} \tag{11}$$

Therefore, the contribution of an unemployed individual is given by equation 12.

$$\Pr(duration) \times \Pr(unemployed) = he^{-ht} \times \frac{\eta}{h+\eta} \tag{12}$$

With the data contributions of the employed individuals and the unemployed individuals, the likelihood function is written as equation 13.

$$\begin{aligned} L &= \prod_{i \in E} \Pr(wage_i | match) \times \Pr(employed) \times \prod_{i \in U} \Pr(duration_i) \times \Pr(unemployed) \qquad (13) \\ &= \prod_{i \in E} \left(\frac{\frac{1}{\alpha\zeta^f} g\left(\frac{1}{\alpha\zeta^f}(w + \alpha c f - (1-\alpha)(\rho U - \gamma f))\right)}{1 - G\left(\frac{1}{\zeta^f}(\rho U + cf - \gamma f)\right)} \times \frac{h}{h+\eta} \right) \times \prod_{i \in U} \left(he^{-ht} \times \frac{\eta}{h+\eta} \right) \end{aligned}$$

The equilibrium is re-parameterized to estimate the set of parameters $\hat{\Omega} = \{\gamma, \zeta, c, \lambda, \eta, \mu, \sigma\}$ by maximizing the following log-likelihood function. The data requirements are the wage, w_i, and flexibility level, f_i, of employed individuals and the duration of unemployment, t_i, for unemployed individuals.

$$\begin{aligned} \log(L) = {} & N \log\left(\frac{h}{h+\eta}\right) + N_U \log(\eta) - h \sum_{i \in U} t_i \\ & + \sum_{i \in E} \log\left(\frac{\frac{1}{\alpha\zeta^{f_i}} g\left(\frac{w_i + \alpha c f_i - (1-\alpha)(\rho U - \gamma f_i)}{\alpha\zeta^{f_i}}\right)}{1 - G\left(\frac{c f_i + \rho U - \gamma f_i}{\zeta^{f_i}}\right)} \right) \end{aligned} \tag{14}$$

where

$$h = \lambda \sum_{f=0}^{F} p_f \left(1 - G\left(\frac{cf + \rho U - \gamma f}{\zeta^f}\right)\right) \tag{15}$$

The model is under-identified in the flexibility parameters: using one measure of flexibility, we need to estimate the utility weight of flexibility γ, the scale of the total factor productivity of flexibility ζ, and the cost of providing flexibility c. We estimate each flexibility parameter individually, holding the other two constant; thus, the log-likelihood function is maximized three times for each sample: first to estimate the utility parameter, second to estimate the productivity parameter, and third to estimate the cost parameter. I will make some assumptions of the value of the remaining parameters following the literature.

The utility gain from flexibility, γ, uses estimates from He et al., 2021, in which the utility weight of flexibility is estimated using results from a field experiment of job postings. Job postings varied in type of flexibility (none, location, schedule, and both location and schedule) and salary ranges (low, medium, high). With data on which postings led to applications, a probit model estimates the probability of applying based on a flexibility and salary conditional on other role characteristics and job seeker characteristics. The ratio of flexibility and wage marginal effects from a fully specified probit model of applying can be interpreted as the marginal rate of substitution of wage for flexibility. In the context of this paper's model, the ratio of the marginal effect of wage over the marginal effect of flexibility provides the utility weight of flexibility analogous to parameter γ. The value of wage comes from the marginal effect of a high salary on the probability of applying, equal to 0.0016.[9] The value of flexibility depends on the type of flexibility: the marginal effect of location flexibility on applying is 0.0010 and the marginal effect of schedule

[9] The marginal effect of high salary was the only statistically significant wage effect on the probability of applying.

flexibility on applying is 0.0011. Therefore, the parameter for γ is set to 0.625 (= 0.0016/0.0010) for estimation of the model using location flexibility and 0.6875 (=0.0011/0.0016) for schedule flexibility. These parameter estimates assume that flexibility is a utility enhancing amenity.

The productivity impact of flexibility, ζ, comes from Bloom et al., 2015, in which the total factor productivity of flexibility is estimated with data from a case study that allowed teleworking. Workers at a call center in China were randomized into two groups: half of the employees stayed in the office and half worked from home. Total factor productivity was calculated using standard measures in the literature with both the common data (employee numbers and shift lengths) and detailed data (minutes worked per day by employee), and found that, compared to their office counterparts, the total factor productivity of the teleworking employees was increased by 21 percent to 28 percent. Using this information, the parameter for ζ is set to 1.25. The measure of cost of providing flexibility, c, is also provided by Bloom et al., 2015. They estimate annual savings per remote worker of \$1900, or \$0.91 per worker-hour saved. Therefore, the parameter for c is set to -0.91.

5 Data

The model is estimated on data from the 2017-18 American Time Use Survey (ATUS) and its Leave and Jobs Flexibility Module. The ATUS is collected by the Bureau of Labor Statistics to provide nationally representative estimates of how, where, and with whom Americans spend their time. The ATUS samples from the pool of individuals who have completed all eight months of the Current Population Survey (CPS) and interviews them two- to five-months after their final CPS interview. The interview with ATUS updates work-related information since the final CPS interview and asks respondents to provide a time diary of the previous day in which activities, their start and end time, location, and other participants are recorded over a 24-hour period.

In 2017-18, the U.S. Department of Labor Women's Bureau conducted the Leave and Jobs Flexibility Module as a part of ATUS (henceforth referred to as the Leave Module). The Leave Module was restricted to ATUS respondents who were employed as a wage or salary worker and were willing to answer questions regarding leave and flexibility. Key topics in the Leave Module include: availability, use, and pay of leave; advance knowledge of and ability to change one's work schedule; and ability, frequency, and structure for working from home. The Leave Module is utilized to create two measures of job flexibility: schedule flexibility and location flexibility.

The Leave Module provides individualized responses to access and utilization of workplace flexibility.[10] Two measures of flexibility are considered: schedule flexibility and location flexibility. Schedule flexibility is determined by the response to the question "Do you have flexible work hours that allow you to vary or make changes in the times you begin and end work?". If the participant responds in the affirmative, we say that the participant has schedule flexibility; otherwise, they do not. Location flexibility is determined by the response to the question "As part of your (main) job, can you work from home?". Respondents are said to have location flexibility if they respond in the affirmative.[11]

For homogeneity, the sample is restricted to white individuals aged 25-55. To explore the impact of human capital accumulation on workplace flexibility, the sample is split between two levels of educational attainment: a high school degree or equivalent, and a college degree or more. The

[10] To avoid concerns of endogeneity in use of flexibility, this analysis is restricted to understanding access to flexibility.

[11] There is a question regarding whether this work is paid, but the question is only asked if the respondent states that they are able to work from home and have worked from home in the past. Therefore, we are concerned with endogenous selection into working from home and subsequent effects of utilization on wages that would impact the estimates.

Table 1: Summary Statistics for Wages

	High school degree				Bachelors degree			
	Obs.	Min.	Mean	Std. Dev.	Obs.	Min.	Mean	Std. Dev.
Men								
No Schedule Flexibility	493	7.67	24.68	11.85	351	7.62	36.25	18.28
Schedule Flexibility	434	6.30	27.64	14.78	926	9.51	45.75	18.89
No Location Flexibility	761	6.74	24.16	11.83	491	7.80	35.82	17.80
Location Flexibility	166	10.78	34.79	16.30	786	10.59	47.72	18.59
Women								
No Schedule Flexibility	313	5.40	17.39	8.78	505	4.77	29.36	15.15
Schedule Flexibility	301	5.42	20.84	11.81	739	7.76	37.12	17.67
No Location Flexibility	463	5.20	16.53	7.64	574	6.30	28.90	15.11
Location Flexibility	151	7.57	26.91	13.80	670	7.47	38.33	17.53

Note: Wages are in 2018 dollars. Wages have been winsorized at the first percentile as defined by gender, education, and flexibility type.

sample of employed was restricted to wage-earning or salaried (i.e., not self-employed) individuals working full-time who reported their wages and responded to the relevant Leave Module questions on workplace flexibility. ATUS asks individuals about their weekly earnings, so hourly wages were calculated by the weekly earnings divided by 40. Estimated hourly wages are presented in 2018 dollars. Due to unfeasible low minimum values of wage, I have winsorized the minimum values to the first percentile by gender and flexibility type. Instead of dropping observations with wages less than the first percentile, these observations are recoded to be the first percentile value. This procedure allows me to keep observations and maintain distributional differences across flexibility type without significant changes to the the mean and standard deviations of the distribution of wages. The wage summary statistics are presented in Table 1.

The number of observations for each type of flexibility show that there is approximately an even split of individuals with a high school degree with and without schedule flexibility. However, more individuals with a high school degree lack location flexibility. On the sample of individuals with at least a Bachelor's degree, we see that more people have flexibility of either type. This fact is

Table 2: Summary Statistics for Duration of Unemployment

	High school degree					Bachelors degree				
	Obs.	Min.	Max.	Mean	Std. Dev.	Obs.	Min.	Max.	Mean	Std. Dev.
Men	39	8.00	54.00	15.28	10.03	27	8.00	131.00	18.63	23.35
Women	56	8.00	129.00	22.11	25.91	28	8.00	129.00	17.75	22.51

Note: Duration of unemployment is calculated as the sum of weeks unemployed in CPS and weeks between CPS and ATUS interview.

consistent with findings that access to workplace flexibility increases with educational attainment (Mas and Pallais, 2020).

As expected, average wages are higher for individuals with more education. However, the spread between average wages by flexibility status is greater for individuals with at least a Bachelor's degree compared to individuals with only a high school degree. This suggests that there may be greater returns to flexibility based on human capital stock. The model will allow us to determine whether these greater returns are due to higher productivity or lower cost of flexibility for workers with more human capital, or differences in preferences by worker type.

The unemployment duration was calculated for individuals who stated that they were unemployed in the ATUS interview by the measure of unemployment duration in the final CPS interview plus the number of weeks between the CPS and ATUS interview. Summary statistics of unemployment duration are presented in Table 2.

The average duration of unemployment is greatest for women with a high school degree and smallest for men with a high school degree. Men with a Bachelor's degree have a longer average unemployment duration than women with a Bachelor's degree. This pattern is not expected, but the large standard deviation of the duration data implies a lot of variation over the small sample of unemployed individuals. As a result, we will be careful interpreting the parameter informed by the unemployment duration: the termination shock.

6 Results

The model is estimated separately for men and women by educational attainment to conform to the homogeneity assumption for individuals in the model. This implicitly assumes that men and women with a certain stock of human capital face different labor market parameters and have heterogeneity preferences, productivity, and cost of flexibility. Estimation results on the sample of individuals with a Bachelor's degree or more are presented in Table 3 for women and Table 4 for men; Tables 5 and 6 show the estimation results for men and women, respectively, who have earned a high school degree or equivalent. Columns (1), (2), and (3) define flexibility as schedule flexibility, or the ability to change the start and end times of work; Columns (4), (5), and (6) define flexibility as location flexibility, or the ability to work from home. Due to under identification, the estimation is run three times; in each procedure, two of the flexibility parameters are held fixed and one is optimized (see Section **??** for details). The bootstrapped standard errors are presented.[12]

Table 3 presents the estimation results on the sample of college-educated women. The labor market and productivity parameters (the arrival rates of offers, λ, and job terminations, η; the distributional parameters of match-specific productivity, μ and σ) are relatively constant across estimations. The large standard error on the estimation of the utility parameter of flexibility, γ, prevents making a conclusion on the utility gain or loss of flexibility. This conclusion supports the argument that the worker side does not drive the relationship between wages and workplace flexibility, conditional on the other flexibility parameters. However, the firm-side parameters are more convincing. Both definitions of flexibility lead to a productivity gain, conditional on fixed utility and cost parameters: workers with schedule (location) flexibility are 24 percent (37 percent)

[12] After estimating the model on 50 bootstrapped samples, the standard error was calculated by the standard deviation of the estimated parameter divided by the square root of the number of samples.

Table 3: Results for Sample of Women with a Bachelors degree

	Schedule			Location		
	(1)	(2)	(3)	(4)	(5)	(6)
λ	0.0422 (0.0021)	0.0323 (0.0038)	0.0470 (0.0024)	0.0438 (0.0025)	0.0331 (0.0040)	0.0474 (0.0022)
η	0.0013 (0.0001)	0.0010 (0.0001)	0.0010 (0.0001)	0.0012 (0.0001)	0.0010 (0.0002)	0.0010 (0.0001)
μ	3.8009 (0.0040)	3.8190 (0.0047)	3.7998 (0.0037)	3.8029 (0.0036)	3.7653 (0.0048)	3.799 (0.0032)
σ	0.6226 (0.0032)	0.6130 (0.0020)	0.6237 (0.0026)	0.6152 (0.0026)	0.6039 (0.0019)	0.6172 (0.0018)
γ	-0.0557 (0.1776)			-0.3888 (0.1536)		
ζ		1.2380 (0.0102)			1.3748 (0.0123)	
c			-1.7531 (0.2553)			-2.2318 (0.1378)
Log Likelihood	5448.95 (5.29)	5461.72 (5.70)	5449.45 (5.08)	5420.74 (5.50)	5430.33 (5.75)	5419.88 (5.00)
Observations	1272	1272	1272	1272	1272	1272

Note: Schedule flexibility is a binary measure defined by the ability to change start- and end-times of work. Location flexibility is a binary measure defined by the ability to work from home. Columns (2) and (3) hold γ constant at 0.6875 while columns (5) and (6) holds γ constant at 0.625. Columns (1), (3), (4), and (6) hold ζ constant at 1.25. Columns (1), (2), (4), and (5) hold c constant at -0.91. Bootstrapped standard errors from 50 samples shown in parentheses.

more productive than their inflexible counterparts. Furthermore, the cost of flexibility is negative for both types of flexibility; flexibility is cost-saving to the firm, conditional on utility and productivity parameters. The firm benefits of flexibility coupled with the weak support of compensating differentials on the worker side imply that the positive relationship between wages and workplace flexibility seen by women are driven by the firm.

The results of the estimation on the sample of men with at least a Bachelor's degree are presented in Table 4. There is more variation in the labor market parameters (λ, η) for men, but all of the values are feasible and have relatively small standard errors. The match-specific distribution

Table 4: Results for Sample of Men with a Bachelors degree

	Schedule			Location		
	(1)	(2)	(3)	(4)	(5)	(6)
λ	0.0041	0.0219	0.0159	0.0047	0.0066	0.0092
	(0.0004)	(0.0030)	(0.0028)	(0.0005)	(0.0015)	(0.0019)
η	0.0001	0.0007	0.0004	0.0001	0.0002	0.0003
	(0.0000)	(0.0002)	(0.0001)	(0.0000)	(0.0000)	(0.0001)
μ	4.0350	3.9956	4.0389	4.0480	3.9878	4.0511
	(0.0031)	(0.0042)	(0.0049)	(0.0035)	(0.0042)	(0.0031)
σ	0.5874	0.5864	0.5833	0.5793	0.5744	0.5773
	(0.0027)	(0.0021)	(0.0033)	(0.0029)	(0.0021)	(0.0022)
γ	0.9875			0.4704		
	(0.1177)			(0.2044)		
ζ		1.3132			1.3848	
		(0.0059)			(0.0072)	
c			-0.1926			-0.7907
			(0.4177)			(0.2965)
Log Likelihood	5878.96	5853.05	5866.14	5848.71	5842.90	5846.21
	(5.31)	(4.81)	(5.66)	(5.44)	(5.71)	(5.88)
Observations	1304	1304	1304	1304	1304	1304

Note: Schedule flexibility is a binary measure defined by the ability to change start- and end-times of work. Location flexibility is a binary measure defined by the ability to work from home. Columns (2) and (3) hold γ constant at 0.6875 while columns (5) and (6) holds γ constant at 0.625. Columns (1), (3), (4), and (6) hold ζ constant at 1.25. Columns (1), (2), (4), and (5) hold c constant at -0.91. Bootstrapped standard errors from 50 samples shown in parentheses.

parameters (μ, σ) do not change much across specifications of the model or definitions of flexibility. Men have a positive and significant utility parameter, γ, for schedule flexibility that is slightly greater than the estimate from the literature. However, the utility parameter in the estimation with flexibility defined as location flexibility has a large standard error, preventing us from confidently saying that men prefer location flexibility more than women. The productivity gain of flexibility is approximately 31 percent for schedule flexibility and 38 percent for location flexibility. These values are close to the estimate in the literature, and the small standard errors suggest that we can be confident in the stability of these values across bootstrapped samples. Finally, the estimates for the cost of providing flexibility to male, high-educated workers are negative, but the large standard errors prevent the conclusion that decreased firm costs are driving the increase in wages for men with flexibility. Although the estimates for men suggest that there might be some utility-driven compensating wage differentials, the increase in productivity when providing flexibility is the most likely reason for the positive relationship between wages and flexibility for men.

One reason that there may be weak evidence of the utility benefits of flexibility for the sample of college-educated individuals is that the definition hinges on access to flexible workplace policies; there is not any consideration of utilization of these policies. A potential extension of this model would incorporate the individual's decision to utilize flexibility.

Table 5 presents the estimation results on the sample of women with a high school degree or equivalent. The labor market and productivity parameters (the arrival rates of offers, λ, and job terminations, η; the distributional parameters of match-specific productivity, μ and σ) are relatively constant across estimations. While the arrival rate of offers, λ, is approximately the same as the sample of women with a Bachelor's degree, the sample of women with a high school degree have a higher exogenous rate of termination, η. Additionally, high-school-educated women have a lower mean of the match-specific productivity, μ, compared to college-educated women.

These women have a high utility-value of flexibility (γ) in both schedule and location of 2.68 and 1.56 utils, respectively; this could cause the small difference in mean wages by flexibility status for women with a high school degree. Although the worker-side parameter indicates that there should be a wage differential, the firm-side parameters show that there are benefits to providing flexibility through higher productivity and lower costs. Both types of flexibility lead to a productivity gain, conditional on fixed utility and cost parameters: workers with schedule flexibility are 33 percent more productive than their inflexible counterparts, and workers with location flexibility

Table 5: Results for Sample of Women with a High school degree

	Schedule			Location		
	(1)	(2)	(3)	(4)	(5)	(6)
λ	0.0449 (0.0011)	0.0368 (0.0019)	0.0508 (0.0058)	0.0414 (0.0009)	0.0352 (0.0027)	0.0448 (0.0010)
η	0.0040 (0.0001)	0.0027 (0.0002)	0.0040 (0.0001)	0.0035 (0.0001)	0.0028 (0.0002)	0.0039 (0.0001)
μ	3.1764 (0.0643)	3.1675 (0.0641)	3.1538 (0.0639)	3.2549 (0.0037)	3.1229 (0.0632)	3.2417 (0.0028)
σ	0.5917 (0.0342)	0.6154 (0.0298)	0.6059 (0.0306)	0.5540 (0.0029)	0.5795 (0.0342)	0.5588 (0.0031)
γ	2.6783 (0.2102)			1.5629 (0.2318)		
ζ		1.3314 (0.1594)			1.6749 (0.0577)	
c			0.5259 (0.4513)			-1.7580 (0.1959)
Log Likelihood	2561.87 (5.29)	2573.89 (7.32)	2567.37 (7.50)	2529.01 (3.92)	2527.84 (7.40)	2525.40 (3.99)
Observations	670	670	670	670	670	670

Note: Schedule flexibility is a binary measure defined by the ability to change start- and end-times of work. Location flexibility is a binary measure defined by the ability to work from home. Columns (2) and (3) hold γ constant at 0.6875 while columns (5) and (6) holds γ constant at 0.625. Columns (1), (3), (4), and (6) hold ζ constant at 1.25. Columns (1), (2), (4), and (5) hold c constant at -0.91. Bootstrapped standard errors from 50 samples shown in parentheses.

are 67 percent more productive than their inflexible counterparts. While the productivity gain for schedule flexibility is close the the estimate found in Bloom et al. (2015), the productivity increase for flexibility in location is more than double any other estimate in this paper and in the literature. Additionally, location flexibility for lower educated women is very cost-saving for the firm, with the estimated value almost double the cost savings found in the literature.

High-school educated women experience the largest utility gain from workplace flexibility. Additionally, they also have the smallest difference in mean wages between flexible and inflexible jobs. If this group of individuals places a large value on flexibility, they would be willing to accept

Table 6: Results for Sample of Men with a High school degree

	Schedule			Location		
	(1)	(2)	(3)	(4)	(5)	(6)
λ	0.0389 (0.0023)	0.0441 (0.0038)	0.0484 (0.0021)	0.0556 (0.0016)	0.0402 (0.0039)	0.0554 (0.0015)
η	0.0019 (0.0002)	0.0020 (0.0002)	0.0020 (0.0001)	0.0023 (0.0001)	0.0021 (0.0003)	0.0024 (0.0001)
μ	3.5248 (0.0048)	3.5782 (0.0034)	3.5567 (0.0071)	3.5797 (0.0037)	3.5831 (0.0028)	3.6044 (0.0033)
σ	0.6023 (0.0041)	0.5882 (0.0022)	0.5814 (0.0055)	0.5830 (0.0025)	0.5678 (0.0021)	0.5685 (0.0020)
γ	0.2718 (0.3032)			-1.9503 (0.4302)		
ζ		1.1405 (0.0066)			1.3501 (0.0106)	
c			1.1168 (0.5417)			1.8890 (0.5294)
Log Likelihood	3868.07 (5.13)	3867.14 (5.63)	3861.03 (5.47)	3822.90 (5.39)	3836.90 (5.65)	3824.37 (5.02)
Observations	966	966	966	966	966	966

Note: Schedule flexibility is a binary measure defined by the ability to change start- and end-times of work. Location flexibility is a binary measure defined by the ability to work from home. Columns (2) and (3) hold γ constant at 0.6875 while columns (5) and (6) holds γ constant at 0.625. Columns (1), (3), (4), and (6) hold ζ constant at 1.25. Columns (1), (2), (4), and (5) hold c constant at -0.91. Bootstrapped standard errors from 50 samples shown in parentheses.

lower wages to have access to flexible workplace policies. Although the positive relationship between flexibility and wages persists with this group of women, the small differential may be caused by a large utility gain of flexibility overriding the increases in productivity and decreases in costs. Combined with the higher value of the termination shock for high-school educated women, the estimation suggests that these women would have the highest option value for flexibility to prevent leaving work when faced with familial obligations.

The results of the estimation on the sample of men with a high school degree or equivalent are presented in Table 6. There is some variation in the labor market parameters (λ, η), but all of the values are feasible and have relatively small standard errors. The arrival rate of matches, λ, and the termination rate, η, are larger for men with a high school degree compared to men with a Bachelor's degree. The match-specific distribution parameters (μ, σ) do not change much across specifications of the model or definitions of flexibility. As expected, he mean of the distribution, μ, is smaller for men with lower education. Men have an insignificant utility parameter, γ, but the utility parameter in the estimation on location flexibility is negative and quite large, suggesting that high-school-educated men experience a disutility from location flexibility. This is the first group of individuals to exhibit decreased utility from flexibility. The productivity gain of flexibility is approximately 14 percent for schedule flexibility and 35 percent for location flexibility. Both of these productivity gains are smaller than the results on men with a Bachelor's degree. Finally, the cost of flexibility is estimated to be statistically significant and positive for men with a high school degree. This is the first estimation to give a positive cost on the provision of flexibility, suggesting that this group of individuals could require greater monitoring if provided flexibility.

Although the mean differences in wages by flexibility for men with a high school degree are similar to women's for the same education level, the results of the estimation show that the cause of these differences are varied. For women, there is a strong preference for flexibility as well as a large productivity and cost benefit to the firms. The positive relationship between wages and flexibility are driven by the firm-considerations outweighing the worker benefits. On the other hand, men do not value flexibility, and even view it as a disamenity in the case of location flexibility. Thus, the positive relationship in wages is due to the firm's need to compensate workers for flexibility.

7 Conclusion

This paper presents a search model that allows for flexibility to impact worker's utility, firm's productivity and firm's costs to decompose the benefits of workplace flexibility to firms and workers. By utilizing data on workplace flexibility policies regarding work schedule and location, two types of flexibility are explored with this model. The model is estimated on individuals with different levels of human capital. The positive relationship between wages and flexibility are driven by productivity increases for highly educated individuals, and these individuals do not demonstrate a utility benefit to flexibility. Low educated women enjoy flexibility the most and have large productivity increases with flexibility. Low educated men dislike some flexibility and it is costly to provide with little productivity gain to the firm.

There are many opportunities to extend this paper. The reasons why workplaces that provide more flexibility are more productive cannot be explored in this model. One could focus on the question of which occupations and industries provide flexibility, and why, to gain insight into the productivity gains of flexibility. Moreover, the cross-sectional data prevents exploration into the impact of flexibility on job transitions. However, panel data obscures the line between access to flexible workplace policies and utilization of those policies, which leads to concerns of selection into use and how that would impact labor market outcomes.

The structure of the worker side of the model can be improved in a few ways. Firstly, the current structure assumes that workers are homogeneous in their preference for flexibility; implementing strategies from Flabbi and Moro (2012) or Bonhomme and Jolivet (2009) could improve the model by including worker heterogeneity in preferences. Second, including the worker's decision to utilize a flexible workplace policy could improve estimates of the utility gain of flexible workplace policies. Third, if we think of flexibility a public good in the household, the individual preference for flexibility may be less important than the household's preference for flexibility. Thus, utilizing a household search framework with data on both household members' flexibility status could improve our understanding of how workplace flexibility is valued and its potential impact on the division of labor in the household.[13]

[13] Dey and Flinn (2008) introduced the household search model to estimate the marginal willingness to pay for health insurance. Arntz et al. (2022) provides an exploration into the heterogeneous effects of workplace flexibility by gender and parenthood.

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