Monopsonistic Distortions under Elastic Labor Supply

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I ask whether monopsonistic distortions in the labor market will be small when firms face large labor supply elasticities. As these elasticities grow large, the distance between the efficient allocation of workers and the monopsonistic allocation of workers will converge to a non-zero constant. Under plausible assumptions, the social costs of monopsonistic wage-setting are also increasing in the elasticity of labor supply. Along the way, I derive the social cost of monopsony under both a random utility framework and a search framework, and in particular I show that these two expressions are identical.

1 Overview

'Monopsonistic' firms face upwards-sloping labor supply curves: to increase employment they must pay a higher wage. Insofar as firms understand this trade-off, they will find it profitable to pay a wage less than their marginal product of labor. This behavior generally distorts the allocation of workers across firms because a firm cannot hire a worker whose reservation wage lies between the firm's optimal wage and the firm's marginal product of labor (Berger *et al.*, 2022; Silbert and Townsend, 2025).

This trade-off will be starker when firms face a lower labor supply elasticity. As such, firms' markdowns — the gap between their marginal product and their wage — will be greater when their labor supply elasticity is lower (Manning, 2005). Inspired by this result, a large labor economics literature has tried to assess whether monopsonistic distortions are an important feature of the labor market by asking whether firms face small labor supply elasticities (see Sokolova and Sorensen, 2021 for a review).

In this note I show that this approach is misguided. While markdowns are indeed less generous when labor supply is less elastic, a given markdown will have a greater effect on the equilibrium allocation when labor supply is *more* elastic. This second effect dominates the first, and so the distance between the efficient allocation of labor and the monopsonistic allocation of labor can be *increasing* in firms' labor supply elasticities. In other words, provided that firms account for whatever small amount of wage-setting power they have when setting wages, this behavior will cause larger distortions when firms' wage-setting power is weak.

In Section 2 I demonstrate this result in an equilibrium model. However the basic intuition can be demonstrated in a model of a single firm. Consider a firm with a constant returns to scale production function $y(L) = pL$. The firm faces an upwards-sloping labor supply schedule $L(w)$, where w is the firm's wage. The competitive wage w^C is the wage at which the firm's choice of labor is profit-maximizing, were it to take the wage as given:

$$L\left(w^C\right) \in \underset{L\in\mathbb{R}^+}{\arg\max}\left\{y(L) - w^C L\right\}.$$

As we all know well, the competitive wage equals the marginal product of labor:

$$w^C = p.$$

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In contrast, the monopsony wage w^M maximizes the firm's profit, given its labor supply constraint:

$$w^M \in \underset{w \in \mathbb{R}^+}{\arg\max} \left\{ y(L(w)) - wL(w) \right\}.$$

Taking a first-order condition and rearranging yields the 'markdown equation'

$$w^M = p \frac{\eta}{1+\eta},$$

where η is the labor supply elasticity facing the firm: $\eta \equiv \frac{w}{L} L'(w)$.

Consider now the distance between competitive labor utilization $L^C = L\left(w^C\right)$ and monopsonistic labor utilization $L^M = L\left(w^M\right)$. To first-order, the log-difference will be given by

$$\log L^C - \log L^M \approx \frac{d \log L}{dw} \left(w^C - w^M\right) = \frac{d \log L}{dw} w^C \left(1 - \frac{\eta}{1+\eta}\right) = \frac{\eta}{1+\eta}. \tag{1}$$

The term $\frac{\eta}{1+\eta}$ is monotonically increasing in η. Thus the distance between competitive labor utilization and monopsonistic labor utilization will be greater when labor supply is more elastic. Section 2 confirms a similar result holds for the allocation of labor across firms in labor market equilibrium.

Having established that more elastic labor supply increases the *distance* between the competitive allocation and the monopsonistic allocation, Section 3 then asks whether it also increases the *costs* of monopsonistic distortions. In Section 3 I measure costs using the compensating variation but, for now, let's continue with our single-firm example in which we can measure welfare $\mathcal{W}$ as simply the aggregate gap between the firm's willingness to pay for its workers and its workers' reservation wages:

$$\mathcal{W}(w) = \int_0^{L(w)} [p - w^s(l)] \, dl, \tag{2}$$

where $w^s = L^{-1}$ is the inverse labor supply schedule. Near the competitive wage $w^C = p$, the second-order welfare effect of a wage deviation will be given by

$$d\mathcal{W} \approx \left.\frac{d\mathcal{W}}{dw}\right|_{w=p} dw + \frac{1}{2} \left.\frac{d^2\mathcal{W}}{dw^2}\right|_{w=p} (dw)^2.$$

Differentiating Equation (2) with respect to the wage, we see that

$$\frac{d\mathcal{W}}{dw} = \left(p - w^s(L)\right) \frac{dL}{dw}. \tag{3}$$

At the competitive wage, inverse labor supply will equal productivity:

$$w^s\left(L\left(w^C\right)\right) = w^C = p, \tag{4}$$

and so $\left.\frac{d\mathcal{W}}{dw}\right|_{w=p} = 0$. Differentiating Equation (3) again with respect to the wage we see that

$$\frac{d^2\mathcal{W}}{dw^2} = \left(p - w^s(L)\right) \frac{d^2L}{dw^2} - \frac{dw^s}{dL} \frac{dL}{dw} \frac{dL}{dw}.$$

By the inverse function rule, $\frac{dw^s}{dL} = \left(\frac{dL}{dw}\right)^{-1}$. Given Equation (4), it must therefore be the case that $\left.\frac{d^2\mathcal{W}}{dw^2}\right|_{w=p} = -\frac{dL}{dw}$. The second-order welfare effect of a wage deviation will thus be equal to

$$d\mathcal{W} \approx -\frac{1}{2} \frac{dL}{dw} (dw)^2 = -\frac{1}{2} \eta \frac{L^C}{w^C} (dw)^2.$$

In particular, the welfare costs of monopsonistic wage-setting will be

$$\mathcal{W}\left(w^C\right) - \mathcal{W}\left(w^M\right) \approx \frac{1}{2}\eta \frac{L^C}{w^C}\left(w^C\left(1-\frac{\eta}{1+\eta}\right)\right)^2 = \frac{1}{2}L^C w^C \frac{\eta}{\left(1+\eta\right)^2}. \tag{5}$$

A couple of features of Equation (5) are worth observing. First, treating L^C as fixed, the welfare costs of monopsony are non-monotonic in the labor supply elasticity η: they are generally positive, but asymptote to zero as η approaches either 0 or ∞. Second, the welfare costs of monopsonistic wage-setting depend on $L^C w^C$: the product of the competitive labor allocation and the competitive wage. This product will itself be a function of the labor supply elasticity. For example, substituting the first-order approximation $\log L^C \approx \log L(1) + \eta\left(\log p - \log 1\right)$ into Equation (5) yields the expression

$$\mathcal{W}\left(w^C\right) - \mathcal{W}\left(w^M\right) = \frac{1}{2}L(1)\,p^{\eta+1}\frac{\eta}{\left(1+\eta\right)^2}. \tag{6}$$

Equation (6) will be asymptotically increasing in η provided that the firm's productivity p is sufficiently large. Intuitively, the welfare costs of monopsony will be greatest when wages (rather than non-wage amenities) play an important role in allocating workers across firms. This will be the case when labor supply is most elastic.

In Section 3 I show that the above logic generalizes to an equilibrium model of the labor market. I do so by deriving the cost of monopsonistic wage-setting both using a random utility framework (in which firms face upward-sloping labor supply schedules because workers have varying preferences across firms) and using a search framework (in which firms face upward-sloping labor supply schedules because of frictions). As it happens, the two expressions that I derive are identical: to second order, conditional on the competitive equilibrium and on the matrix of cross-firm labor supply elasticities, the cost of monopsonistic wage-setting under random utility is identical to the cost of monopsonistic wage-setting under search.

I then ask how that expression depends on the matrix of cross-firm labor supply elasticities. When I treat the competitive allocation of workers as fixed I again find the welfare costs of monopsonistic wage-setting are non-monotonic in firms' labor supply elasticities: they asymptote to zero as these elasticities either shrink to zero or become asymptotically large. When I do not treat the competitive allocation of workers as fixed, the welfare costs of monopsonistic wage-setting can be asymptotically increasing in the labor supply elasticities. For example, that will generically be the case under a random utility framework with log utility.

The approach taken in sections 2 and 3 is to take first- or second-order Taylor approximations and then ask how these approximations are themselves affected by labor supply elasticities. This approach might leave some readers unsatisfied, and so in Section 4 I present a fully-specified model of two firms engaging in Nash-Bertrand competition. I confirm numerically that both the distance between the competitive and monopsony allocations and the welfare costs of monopsonistic wage-setting are low when the elasticity of labor supply is sufficiently low.

Relations to the existing literature. This paper is inspired by the large structural literature characterizing monopsonistic distortions in the labor market (*e.g.* Volpe, 2025; Townsend and Allan, 2025; Chan *et al.*, 2024). As far as I am aware, my core insight — that distortions can grow when labor supply becomes more elastic — has not been reported in that literature.

I also contribute to the literature deriving sufficient statistics for distortions in discrete choice models (Chetty, 2009; Small and Rosen, 1981). I extend those results by deriving the costs of more general wedges (rather than *e.g.* a uniform ad-valorem tax), by leveraging the Milgrom and Segal (2002) envelope theorem to avoid functional assumptions, and by extending the analysis to search models.

Finally, I contribute to a new literature comparing the search and random utility microfoundations of market power. Trottner (2025) presents conditions under which a search model can be represented as a static representative agent model; this result is thematically similar to my result that search models and random utility models yield identical welfare expressions. In an analysis of a product market, Menzio (2024) shows that an efficient search model can yield an arbitrary distribution of markdowns, and so cautions against inferring inefficiency from the markdown distribution. I present a statistic from which one *can* infer inefficiency, and confirm that it is zero in an efficient search model.

Roadmap. Section 2 analytically studies the distance between the monopsonistic allocation and the competitive allocation, Section 3 analytically studies welfare, and Section 4 provides simulations. Section 5 concludes by discussing the implications of my results for labor market research.

2 Effects on the Allocation of Labor

The model considered in this section comprises a discrete set of firms $\mathbf{F}$. Each firm f is endowed with a productivity p_f and will pay a wage w_f. Our model allocates each firm a mass of labor L_f, which will depend both on the wage chosen by f and on the wage chosen by firms other than f:

$$L_f = L_f\left(w_f, \vec{w}_{-f}\right); \quad \vec{w}_{-f} \equiv \left(w_g\right)_{g\in\mathbf{F}\setminus f}.$$

I assume that $L_f\left(w_f, \vec{w}_{-f}\right)$ is smooth and is increasing in the firm's own wage w_f.

I consider two solution concepts. The *competitive wage* vector $\vec{w}^C$ are the wages such that each firm's choice of labor is profit-maximizing, were it to take the wage as given:

$$L_f\left(w_f^C, \vec{w}_{-f}^C\right) \in \underset{L\in\mathbb{R}^+}{\arg\max}\left\{p_f L - w_f^C L\right\}.$$

The *monopsony wage* vector $\vec{w}^M$ is chosen *a la* Nash-Bertrand: that is, each firm chooses its wage to maximize its profits, given its labor supply constraint and the wage choices of other firms:

$$w_f^M \in \underset{w\in\mathbb{R}^+}{\arg\max}\left\{p_f L_f\left(w, \vec{w}_{-f}^M\right) - w L_f\left(w, \vec{w}_{-f}^M\right)\right\}. \tag{7}$$

My model nests both of the major traditions in labor monopsony. The model nests 'differentiated firm' models in which firms face upward-sloping labor supply curves because workers have differing preferences over the amenities provided by different firms (Card *et al.*, 2018). In such models, $L_f\left(w_f, \vec{w}_{-f}\right)$ equals the mass of workers for whom firm f yields maximal utility. The model also nests search models in which $L_f\left(w_f, \vec{w}_{-f}\right)$ equals the steady-state mass of workers matched to firm f (Burdett and Mortensen, 1998; Manning, 2005). Note also that our worker allows for a non-employment margin; $\sum_{f\in\mathbf{F}} L_f\left(w_f, \vec{w}_{-f}\right)$ may or may not be a constant.

Let $L_f^C \equiv L_f\left(w_f^C, \vec{w}_{-f}^C\right)$ denote the mass of labor allocated to f when all firms pay competitive wages and let $L_f^M \equiv L_f\left(w_f^M, \vec{w}_{-f}^M\right)$ denote the mass of labor allocated to f when all firms pay monopsony wages. As in the model presented in the introduction, one can take first order conditions to show that competitive wages will equal marginal product —

$$w_f^C = p_f$$

— while monopsony wages are marked down by a function of the firm's labor supply elasticity:

$$w_f^M = p_f \frac{\eta_{f,f}}{1+\eta_{f,f}}, \tag{8}$$

where $\eta_{f,f}$ is the elasticity of labor supplied to firm f with respect to firm f's own wage.

To first order, the difference between the log labor allocated to a firm under the competitive wage vector and the log labor allocated to a firm under the monopsony wage vector will be given by

$$\begin{aligned}\log\left(L_f^C\right)-\log\left(L_f^M\right) \approx \sum_{g\in\mathbf{F}}\left(w_g^C-w_g^M\right)\frac{\partial \log L_f}{\partial w_g} &= \sum_{g\in\mathbf{F}}\left(1-\frac{\eta_{g,g}}{1+\eta_{g,g}}\right)w_g\frac{\partial \log L_f}{\partial w_g}\\ &= \sum_{g\in\mathbf{F}}\frac{\eta_{f,g}}{1+\eta_{g,g}} \equiv d_f,\end{aligned} \tag{9}$$

where $\eta_{f,g}$ is the elasticity of firm f's labor supply with respect to firm g's wage. Note that the difference d_f may be positive or negative: though the firm will necessarily choose a monopsony wage lower than its competitive wage, its competitors will as well.

I now ask how d_f is affected by the elasticities of labor supply. I consider a proportionate increase to each of the cross-firm and own-firm elasticities: I denote $\eta_{f,g} = \alpha\eta^0_{f,g}$, where the terms $\eta^0_{f,g}$ will be treated as fixed and where $\alpha > 0$ is the proportional shifter of elasticities. As the elasticities become small, d_f will approach zero:

$$\lim_{\alpha\to 0^+} d_f = \lim_{\alpha\to 0^+}\sum_{g\in\mathbf{F}}\frac{\alpha\eta^0_{f,g}}{1+\alpha\eta^0_{g,g}} = 0.$$

As the elasticities become large, d_f will converge to a constant:

$$\lim_{\alpha\to\infty} d_f = \lim_{\alpha\to\infty}\sum_{g\in\mathbf{F}}\frac{\alpha\eta^0_{f,g}}{1+\alpha\eta^0_{g,g}} = \sum_{g\in\mathbf{F}}\frac{\eta^0_{f,g}}{\eta^0_{g,g}}.$$

In particular, $\lim_{\alpha\to\infty} d_f$ will be generally non-zero.[1]

The above constitutes a proof of the following result:

Proposition 1. *As the labor supply elasticities approach zero, the distance between the competitive allocation and the monopsonistic allocation will also approach zero:*

$$\lim_{\alpha\to 0^+} d_f = 0.$$

As the labor supply elasticities grow, the distance between the competitive allocation and the monopsonistic allocation will generically converge to a non-zero constant:

$$\lim_{\alpha\to\infty} d_f = \sum_{g\in\mathbf{F}}\frac{\eta^0_{f,g}}{\eta^0_{g,g}}.$$

In the one-firm example in Section 1, the distance between the competitive allocation and the monoponistic allocation grew *monotonically* in the labor supply elasticity. With multiple firms this need not be the case, because a sum of monotonic functions need not itself be monotonic.

[1] An important counterexample is when firms all face the same labor supply elasticity (i.e. $\eta_{g,g}$ is constant across firms g) and workers' labor supply is homogeneous of degree zero in wages, with no nonemployment margin, so $\sum_{g\in\mathbf{F}}\eta_{f,g} = 0$. In this case d_f will equal zero.

3 Effects on Welfare

I now turn to the social costs of monopsonistic wage-setting. I derive a second-order approximation to that cost using two frameworks: in subsection 3.1 I use a random utility framework *a la* Card *et al.* (2018), while in 3.2 I use a search framework *a la* Burdett and Mortensen (1998). These two frameworks yield identical expressions: to second order, conditional on the efficient equilibrium and on the matrix of cross-firm labor supply elasticities, the cost of monopsonistic wage-setting under random utility is identical to the cost of monopsonistic wage-setting under search. In subsection 3.3 I return to my primary research question by asking how that cost changes when the matrix of labor supply elasticities grows.

3.1 The costs of monopsonistic wage-setting in a random utility framework

In this subsection I assume that labor supply is governed by workers' preferences over firms (and over nonemployment). Specifically, I assume that each of a continuum of workers $i \in \mathbf{I} = [0,1]$ chooses either a firm or nonemployment to maximize their utility, given the vector of wages:

$$f_i(\vec{w}) \in \underset{g \in \mathbf{F} \cup \{\emptyset\}}{\arg\max} \left\{ v\left(w_g\right) + e_{i,g} \right\}, \tag{10}$$

where $\emptyset$ denotes nonemployment, where $v(\cdot)$ is a smooth, increasing function, and where the random vectors $\vec{e}_i \equiv \left(e_{i,f}\right)_{f \in \mathbf{F} \cup \{\emptyset\}}$ are drawn from some absolutely continuous distribution, independent across workers. This preference structure generates the additive random utility model

$$L_f\left(w_f, \vec{w}_{-f}\right) = \mathbb{P}\left[f \in \underset{g \in \mathbf{F} \cup \{\emptyset\}}{\arg\max} \left\{ v\left(w_g\right) + e_{i,g} \right\} \right],$$

where the probability is taken with respect to the Lebesgue measure on $\mathbf{I}$.

Firm payoffs are defined as in Section 2. The competitive wage vector and the monopsony wage vector are also defined as in Section 2, except that I additionally specify that wages in non-employment are equal to the marginal productivity of non-employment: $w_\emptyset^C = w_\emptyset^M = p_\emptyset$. This assumption is plausible insofar as one thinks of non-employment as home production.[2]

I will measure welfare using the compensating variation: the aggregate transfer required to compensate both workers and firms for the departure from the competitive equilibrium. For each worker $i \in \mathbf{I}$, let $f_i^C \equiv f_i\left(\vec{w}^C\right)$ denote worker i's competitive firm (which will generically be unique), and let $CV_i(\vec{w})$ denote the transfer required to compensate them for the fact that firms have chosen the wage vector $\vec{w}$, rather than the competitive wage:

$$v\left(w_{f_i^C}^C\right) + e_{i,f_i^C} = \max_{f \in \mathbf{F} \cup \{\emptyset\}} \left\{ v\left(w_f + CV_i(\vec{w})\right) + e_{i,f} \right\}. \tag{11}$$

Similarly, let CV_f denote the transfer required to compensate firm f for the wage vector $\vec{w}$, rather than the competitive wage:

$$L_f\left(w_f, \vec{w}_{-f}\right)\left(p_f - w_f\right) + CV_f = L_f\left(w_f^C, \vec{w}_{-f}^C\right)\left(p_f - w_f^C\right).$$

[2] When non-employment is subsidized, for example through an unemployment insurance system, we might have $w_\emptyset > p_\emptyset$. One can extend my analysis to such cases by adding the costs of this subsidy to our welfare measure. Doing so introduces first-order terms to the welfare costs of monopsonistic wage-setting; as in Section 2, the magnitudes of these first-order terms are increasing in the elasticity of labor supply.

I denote the compensating variation induced by the (potentially non-competitive) wage vector $\vec{w}$ as $\mathcal{W}(\vec{w})$:

$$\mathcal{W}(\vec{w}) \equiv -\int_{i\in\mathbf{I}} CV_i \, di - \sum_{f\in\mathbf{F}} CV_f. \tag{12}$$

I now turn to deriving a second-order approximation to $\mathcal{W}\left(\vec{w}^M\right)$. First consider workers. By the generalized envelope theorem of Milgrom and Segal (2002), the right hand side of Equation (11) will almost-everywhere be differentiable with respect to the wages w_f and to the transfer CV_i. Specifically, it is generically the case that

$$\frac{\partial}{\partial w_g}\left[\max_{f\in\mathbf{F}\cup\{\emptyset\}}\left\{v\left(w_f + CV_i\right) + e_{i,f}\right\}\right] = \begin{cases} v'\left(w_g + CV_i\right) & \text{if } g \in \arg\max_{f\in\mathbf{F}\cup\{\emptyset\}}\left\{v\left(w_f + CV_i\right) + e_{i,f}\right\}; \\ 0 & \text{otherwise,}\end{cases} \tag{13}$$

and that

$$\frac{\partial}{\partial CV_i}\left[\max_{f\in\mathbf{F}\cup\{\emptyset\}}\left\{v\left(w_f + CV_i\right) + e_{i,f}\right\}\right] = v'\left(w_{f_i^*} + CV_i\right), \tag{14}$$

where $f_i^* \in \arg\max_{f\in\mathbf{F}\cup\{\emptyset\}}\left\{v\left(w_f + CV_i\right) + e_{i,f}\right\}$.

Taking the total derivative of Equation (11) with respect to each w_g we have that

$$0 = \frac{\partial}{\partial w_g}\left[\max_{f\in\mathbf{F}\cup\{\emptyset\}}\left\{v\left(w_f + CV_i\right) + e_{i,f}\right\}\right] + \frac{\partial CV_i}{\partial w_g}\frac{\partial}{\partial CV_i}\left[\max_{f\in\mathbf{F}\cup\{\emptyset\}}\left\{v\left(w_f + CV_i\right) + e_{i,f}\right\}\right]$$

which, with equations (13) and (14), implies that almost everywhere,

$$\frac{\partial CV_i}{\partial w_g} = \begin{cases} -1 & \text{if } g \in \arg\max_{f\in\mathbf{F}\cup\{\emptyset\}}\left\{v\left(w_f + CV_i\right) + e_{i,f}\right\} \\ 0 & \text{otherwise.}\end{cases}$$

Aggregating across all workers, we have

$$\int_{i\in\mathbf{I}} \frac{\partial CV_i}{\partial w_g} di = -\mathbb{P}\left[g \in \underset{f\in\mathbf{F}\cup\{\emptyset\}}{\arg\max}\left\{v\left(w_f + CV_i\right) + e_{i,f}\right\}\right] = -L_g. \tag{15}$$

Now consider a firm. Given that competitive wages equal marginal product $\left(p_f = w_f^C\right)$, competitive profits will be zero, and so CV_f will equal the negative of a firm's profits:

$$L_f\left(w_f, \vec{w}_{-f}\right)\left(w_f - p_f\right) = CV_f. \tag{16}$$

Differentiating Equation (16) with respect to the wages of firm g yields

$$\frac{\partial}{\partial w_g} CV_f = \frac{\partial}{\partial w_g}\left[\left(w_f - p_f\right) L_f\right] = \begin{cases} \left(w_f - p_f\right)\frac{\partial L_f}{\partial w_g} & \text{if } f \neq g \\ \left(w_f - p_f\right)\frac{\partial L_f}{\partial w_f} + L_f & \text{if } f = g.\end{cases}$$

And so the effect of a change in firm g's wage on the aggregate firm compensating variation will be

$$\sum_{f\in\mathbf{F}} \frac{\partial CV_f}{\partial w_g} = \sum_{f\in\mathbf{F}}\left(w_f - p_f\right)\frac{\partial L_f}{\partial w_g} + L_g. \tag{17}$$

Summing (15) and (17) implies that

$$\frac{\partial}{\partial w_g}\mathcal{W}(\vec{w}) = \sum_{f\in\mathbf{F}}\left(p_f - w_f\right)\frac{\partial L_f}{\partial w_g} = \sum_{f\in\mathbf{F}}\left(p_f - w_f\right)\frac{L_f}{w_g}\eta_{f,g}. \tag{18}$$

Differentiating Equation (18) again with respect to w_k yields

$$\frac{\partial^2}{\partial w_g \partial w_k}\mathcal{W}(\vec{w}) = \frac{\partial}{\partial w_k}\left[\sum_{f\in\mathbf{F}}\left(p_f - w_f\right)\frac{L_f}{w_g}\eta_{f,g}\right] = -\frac{L_k}{w_g}\eta_{k,g} + \sum_{f\in\mathbf{F}}\left(p_f - w_f\right)\frac{\partial}{\partial w_k}\left[\frac{L_f}{w_g}\eta_{f,g}\right]. \tag{19}$$

Consider a second-order Taylor approximation to the welfare costs of non-competitive wage-setting:

$$d\mathcal{W} \approx \sum_{f\in\mathbf{F}\cup\{\emptyset\}}\left[\left.\frac{\partial\mathcal{W}}{\partial w_f}\right|_{\vec{w}=\vec{w}^C} dw_f\right] + \frac{1}{2}\sum_{g\in\mathbf{F}\cup\{\emptyset\}}\sum_{k\in\mathbf{F}\cup\{\emptyset\}}\left[\left.\frac{\partial^2\mathcal{W}}{\partial w_g\partial w_k}\right|_{\vec{w}=\vec{w}^C} dw_g dw_k\right]. \tag{20}$$

Evaluating equations (18) and (19) at the competitive wage vector $\vec{w} = \vec{w}^C = \vec{p}$ and substituting them into Equation (20) yields

$$d\mathcal{W} \approx \frac{-1}{2}\sum_{g\in\mathbf{F}\cup\{\emptyset\}}\sum_{k\in\mathbf{F}\cup\{\emptyset\}}\frac{L_k^C}{p_g}\eta_{k,g}dw_g dw_k.$$

In particular, the costs of monopsonistic wage-setting will equal

$$\begin{aligned}\mathcal{W}\left(\vec{w}^C\right) - \mathcal{W}\left(\vec{w}^M\right) \approx& \frac{1}{2}\sum_{g\in\mathbf{F}}\sum_{k\in\mathbf{F}}\frac{L_k^C}{p_g}\eta_{k,g}\left(w_g^C - w_g^M\right)\left(w_k^C - w_k^M\right)\\ =& \frac{1}{2}\sum_{g\in\mathbf{F}}\sum_{k\in\mathbf{F}}L_k^C p_k\eta_{k,g}\left(\frac{1}{1+\eta_{g,g}}\right)\left(\frac{1}{1+\eta_{k,k}}\right) \equiv \mathcal{C}.\end{aligned} \tag{21}$$

3.2 The costs of monopsonistic wage-setting in a search framework

In this section I derive the social cost of monopsonistic wage-setting in a dynamic search model similar to that of Burdett and Mortensen (1998). I amend the Burdett and Mortensen setup in the following ways. First, to concord with the analysis in prior sections, I assume that the set of firms is discrete rather than continuous.[3] Second, I introduce random moving costs. Moving costs are a realistic feature of job search and their inclusion also ensures that firms' labor supply schedules are differentiable. Third, I situate my model in discrete time.

Setup. Our model comprises a discrete set of firms $\mathbf{F}$ and a continuum of workers $\mathbf{I} = [0,1]$ who interact across an infinite horizon of discrete periods t. Each firm $f \in \mathbf{F}$ is endowed with a constant returns to scale production function $y_f(L) = p_f L$, and chooses at the start of time a wage w_f.

At the start of each period t, each worker $i \in \mathbf{I}$ either will be employed (so $f_{i,t} \in \mathbf{F}$) or will be unemployed (so $f_{i,t} = \emptyset$). She is risk neutral, so receives flow utility equal to $w_{f_{i,t}}$. She then receives offers from prospective employers and learns whether her current position has been disestablished; let $C \subseteq \mathbf{F}\cup\{\emptyset\}$ denote her resultant choice set of employment options. Unemployment is always an option — $\emptyset \in C$ — so the worker's choice set is never empty. If she chooses to move to a new employer (or to unemployment) $f \neq f_{i,t}$, she must pay a one-off moving cost $c_f \geq 0$; these moving costs are observed before the worker decides whether to move.

Workers discount the future at factor β. The joint distribution of workers' choice sets $C_{i,t}$ and moving costs $\vec{c}$ may depend on her current firm, but will be otherwise independent of the worker's history. The value function of being employed at firm f (or being unemployed) is thus given by

$$V_f = w_f + \beta\mathbb{E}\left[\max_{g\in C}\{V_g - c_g\}\,\middle|\, f_{i,t} = f\right]. \tag{22}$$

[3] Gottfries and Jarosch (2025) also consider a dynamic monopsony model with a discrete set of firms; their model, unlike ours, is constrained efficient.

The worker pays no cost to remain at their current firm: $c_{f_{i,t}} = 0$. I assume that the other moving costs $\vec{c}_{-f_{i,t}}$ are drawn from an absolutely continuous distribution, conditional on one's current firm. I also assume that there is some chance that a worker's only option will be unemployment: for all f, $\mathbb{P}\left[C = \{\emptyset\} \middle| f_{i,t} = f\right] > 0$.

Equilibrium. I continue to assume that firms set wages *a la* Nash-Bertrand. In particular, I follow Burdett and Mortensen (1998) in assuming that firms set wages to maximize their steady-state profits:

$$w_f^M \in \underset{w \in \mathbb{R}^+}{\arg\max} \left\{ p_f L_f^s\left(w, \vec{w}_{-f}^M\right) - w L_f^s\left(w, \vec{w}_{-f}^M\right) \right\},$$

where $L_f^s\left(w_f, \vec{w}_{-f}\right)$ is the steady-state employment at firm f that would occur, were firm f to choose wage w_f while other firms choose wage $\vec{w}_{-f}$.

These equilibrium wages will again satisfy the markdown equation (8), provided that firms' long-run labor supply curves — and thus, their profit functions — are differentiable with respect to their own wage. To see that they are, note that probability that a worker currently at $f \in \mathbf{F} \cup \{\emptyset\}$ will transition to $g \in \mathbf{F} \cup \{\emptyset\}$ is given by

$$T_{f,g} = \mathbb{P}\left[g \in \underset{k \in C}{\arg\max} \{V_k - c_k\} \middle| f_{i,t} = f \right].$$

(Given the absolutely continuous distribution of moving costs, the maximizer is almost always a singleton.) Collect these probabilities into a transition matrix T. The steady-state distribution of workers across firms will be the eigenvector of this matrix: $T' L_f = L_f$. Recall our assumption that there is some chance that a worker's only option will be unemployment; this assumption implies that for all f $T_{f,\emptyset} > 0$. It follows that the transition matrix T will have a unique steady state, *i.e.* its eigenvalue 1 will be simple. It *then* follows that the corresponding eigenvector — the steady state — will be differentiable with respect to the components of the matrix (Lax, 2007). It thus remains to be shown that the transition probabilities $T_{f,g}$ are differentiable with respect to the wage vector. I will now show that the transition probabilities are differentiable with respect to the value functions V_k; I show that these value functions are themselves differentiable with respect to the wage vector towards the end of this subsection.

By iterating expectations,

$$T_{f,g} = \mathbb{P}\left[g \in \underset{j \in C}{\arg\max} \left\{V_j - c_j\right\} \middle| f_{i,t} = f \right] = \mathbb{E}_C\left[\mathbb{P}\left[g \in \underset{j \in C}{\arg\max} \left\{V_j - c_j\right\} \middle| C, f_{i,t} = f \right] \middle| f_{i,t} = f \right].$$

By the linearity of differentiation, for any $k \in \mathbf{F} \cup \{\emptyset\}$,

$$\frac{\partial}{\partial V_k} T_{f,g} = \mathbb{E}_C\left[\frac{\partial}{\partial V_k} \mathbb{P}\left[g \in \underset{j \in C}{\arg\max} \left\{V_j - c_j\right\} \middle| C, f_{i,t} = f \right] \middle| f_{i,t} = f \right].$$

It will thus suffice to show that each conditional choice probability $\mathbb{P}\left[g \in \arg\max_{j \in C} \left\{V_j - c_j \middle| f_{i,t} = f\right\} \middle| C, f_{i,t} = f \right]$ is differentiable with respect to V_k — but having conditioned on the random sets C, this is just a standard result in random utility theory. Specifically, these choice probabilities can be expressed as

$$\begin{aligned}
\mathbb{P}\left[g \in \underset{j \in C}{\arg\max} \left\{V_j - c_j\right\} \middle| C, f_{i,t} = f \right] &= \mathbb{P}\left[\bigcap_{j \in C \setminus \{g\}} \left\{V_g - c_g \geq V_j - c_j\right\} \middle| C, f_{i,t} = f \right] \\
&= \mathbb{P}\left[\bigcap_{j \in C \setminus \{g\}} \left\{c_g - c_j \leq V_g - V_j\right\} \middle| C, f_{i,t} = f \right] \\
&= \int_{\vec{x} \leq \left\{V_g - V_j\right\}_{j \in C \setminus \{g\}}} \psi\left(\vec{x}\right) \, d\vec{x},
\end{aligned}$$

where ψ is the PDF of the random vector $\left\{c_g - c_j\right\}_{j \in C \setminus \{g\}}$ given C and given $f_{i,t} = f$; by the absolute continuity of the moving costs that PDF exists. The derivative of the conditional choice probabilities with respect to some V_k thus follows from the Second Fundamental Theorem of Calculus.

Worker welfare. Our model is equivalent to a model in which a representative worker shifts labor across firms. To see this, first note that the worker's problem is equivalent to a deconstrained problem in which the moving costs are infinite for firms not in her choice set:

$$\mathbb{E}\left[\max_{g \in C}\left\{V_g - c_g\right\} \middle| f_{i,t} = f\right] = \mathbb{E}\left[\max_{g \in \mathbf{F} \cup \{\emptyset\}}\left\{V_g - \tilde{c}_g\right\} \middle| f_{i,t} = f\right]; \quad \tilde{c}_g = \begin{cases} c_g & \text{if } g \in C \\ \infty & \text{if } g \notin C. \end{cases}$$

This problem is in turn equivalent to the problem facing a representative worker finding an optimal mapping μ of these moving costs into an employment choice:

$$\mathbb{E}\left[\max_{g \in \mathbf{F} \cup \{\emptyset\}}\left\{V_g - \tilde{c}_g\right\} \middle| f_{i,t} = f\right] = \sup_{\mu \in \mathcal{M}}\left\{\mathbb{E}\left[V_{\mu(\vec{\tilde{c}})} - \tilde{c}_{\mu(\vec{\tilde{c}})} \middle| f_{i,t} = f\right]\right\},$$

where $\mathcal{M} = [0,\infty]^{|\mathbf{F} \cup \{\emptyset\}|} \to \mathbf{F} \cup \{\emptyset\}$ is the set of functions from moving cost vectors to an employment choice. In turn, *this* problem is equivalent to the two-step problem of optimizing over such mappings subject to a constraint on the overall transition probabilities, and then optimizing over those transition probabilities. Letting $\Delta^{|\mathbf{F}|}$ denote the probability simplex on the $|\mathbf{F}| + 1$ employment options:

$$\begin{aligned}\sup_{\mu \in \mathcal{M}}\left\{\mathbb{E}\left[V_{\mu(\vec{\tilde{c}})} - \tilde{c}_{\mu(\vec{\tilde{c}})} \middle| f_{i,t} = f\right]\right\} &= \sup_{\vec{T} \in \Delta^{|\mathbf{F}|}}\left\{\sup_{\mu \in \mathcal{M}}\left\{\mathbb{E}\left[V_{\mu(\vec{\tilde{c}})} - \tilde{c}_{\mu(\vec{\tilde{c}})} \middle| f_{i,t} = f\right] \text{ s.t. } \left\{\mathbb{P}\left[\mu\left(\vec{\tilde{c}}\right) = g\right]\right\}_{g \in \mathbf{F} \cup \{\emptyset\}} = \vec{T}\right\}\right\} \\ &= \sup_{\vec{T} \in \Delta^{|\mathbf{F}|}}\left\{\mathbb{E}\left[V_{\mu^*(\vec{\tilde{c}};\vec{T})} - \tilde{c}_{\mu^*(\vec{\tilde{c}};\vec{T})} \middle| f_{i,t} = f\right]\right\},\end{aligned}$$

where $\mu^*\left(\vec{\tilde{c}}; \vec{T}\right)$ is an optimal mapping of moving costs into firm choices, given the transition probabilities $\vec{T}$:

$$\mu^*\left(\vec{\tilde{c}}; \vec{T}\right) \in \operatorname*{argsup}_{\mu \in \mathcal{M}}\left\{\mathbb{E}\left[V_{\mu(\vec{\tilde{c}})} - \tilde{c}_{\mu(\vec{\tilde{c}})} \middle| f_{i,t} = f\right] \text{ s.t. } \forall : \left\{\mathbb{P}\left[\mu\left(\vec{\tilde{c}}\right) = g\right]\right\}_{g \in \mathbf{F} \cup \{\emptyset\}} = \vec{T}\right\}.$$

Finally, because the value functions V_f are deterministic,

$$\mathbb{E}\left[V_{\mu^*(\vec{\tilde{c}};\vec{T})} \middle| f_{i,t} = f\right] = \vec{T}'\vec{V}.$$

Combining these results with the Bellman equation (22), I have shown

$$V_f = w_f + \beta \sup_{\vec{T} \in \Delta^{|\mathbf{F}|}}\left\{\vec{T}'\vec{V} - C_f\left(\vec{T}\right)\right\},$$

where $C_f\left(\vec{T}\right) = \mathbb{E}\left[\tilde{c}_{\mu^*(\vec{\tilde{c}};\vec{T})} \middle| f_{i,t} = f\right]$ is the minimal moving cost given with the transition probabilities $\vec{T}$. Summing across firms, we see that overall worker welfare $W = \sum_{f \in \mathbf{F} \cup \{\emptyset\}} L_f V_f$ can be represented by the value function of a representative worker:

$$W\left(\vec{L}\right) = \vec{L}'\vec{w} + \beta \sup_{T \in \mathcal{T}_{\mathbf{F} \cup \{\emptyset\}}}\left\{W\left(T'\vec{L}\right) - C\left(T; \vec{L}\right)\right\},$$

where $\mathcal{T}_{\mathbf{F} \cup \{\emptyset\}}$ is the set of transition matrices on the alternatives $\mathbf{F} \cup \{\emptyset\}$ and where $C\left(T; \vec{L}\right) = \sum_{f \in \mathbf{F} \cup \{\emptyset\}} L_f C_f\left(T_{[f,:]}; \vec{L}\right)$ is the overall moving cost associated with the transition matrix T.

By the envelope theorem, the derivative of this representative worker's value function with respect to the wage of some firm f is given by

$$\frac{\partial}{\partial w_f} W\left(\vec{L}\right) = L_f + \beta \frac{\partial}{\partial w_f} W\left(T^*\left(\vec{L}\right)' \vec{L}\right),$$

where $T^*\left(\vec{L}\right) \in \operatorname{argsup}_{T \in \mathcal{T}_{\mathbf{F}\cup\{\emptyset\}}} \left\{W\left(T'\vec{L}\right) - C\left(T;\vec{L}\right)\right\}$. In particular, around a steady-state allocation of labor $\vec{L}$ such that $T^*\left(\vec{L}\right)' \vec{L} = \vec{L}$,

$$\frac{\partial}{\partial w_f} W\left(\vec{L}\right) = \frac{L_f}{1-\beta}. \tag{23}$$

Finally, note that the value function $W\left(\vec{L}\right)$ equals the net present value of mean utility flows $U \equiv \mathbb{E}\left[w_{f_{i,t}} - c_{f_{i,t}}\right]$ (which are constant over time in steady state):

$$W\left(\vec{L}\right) = \sum_{t=0}^{\infty} \beta^t U = \frac{U}{1-\beta}. \tag{24}$$

Combining equations (23) and (24) implies that the derivative of mean worker utility flows with respect to any wage is just given by the number of workers earning that wage:

$$\frac{\partial}{\partial w_f} U = L_f.$$

This expression is identical to the corresponding expression for random utility models in Equation (15).

Firm profits and aggregate welfare. Firms in this search model are essentially identical to firms in the random utility model of the prior subsection, and so the expression in Equation (17) will continue to hold. Having established that the effect of noncompetitive wages on both worker and firm welfare is identical under a search framework as it was under a random utility framework, my other derivations — and in particular, the second-order approximation to the social costs of monopsony expressed in Equation (21) — will remain valid as well.

When markdowns *are* efficient. Markdowns in the textbook Burdett and Mortensen model are efficient: despite markdowns, more productive firms pay higher wages so workers always choose to move to a more productive firm when the option avails. By adding moving costs to the Burdett and Mortensen model I introduce two sources of inefficiency. First, some distributions of moving costs will break the monotonic relationship between productivity and wages. Second, even when higher productivity firms do pay higher wages, workers who draw a moderate moving cost might remain at their original firm when moving would be justified by productivity growth but not by wage growth.

Nonetheless, it is reassuring that my welfare statistic *does* correctly ascertain when markdowns *are* efficient. To see this, note that markdowns will not affect workers' moving decisions when (a) the difference between any two firms' wages equals the difference between their productivities:

$$\forall f, g \in \mathbf{F}: p_f - w_f = p_g - w_g, \tag{25}$$

and (b) workers' non-employment vs. employment decisions are unaffected by markdowns:

$$\forall f \in \mathbf{F}: \eta_{\emptyset,f} = 0. \tag{26}$$

Requirement (25) requires that markdowns be constant *in levels*: there exists some m such that, $\forall f \in \mathbf{F} : p_f - w_f = m$.[4] With $w_f = p_f \frac{\eta_{f,f}}{1+\eta_{f,f}}$, this requirement can be expressed as the requirement that for some m:

$$\forall f \in \mathbf{F} : \frac{1}{1+\eta_{f,f}} = \frac{m}{p_f}. \tag{27}$$

Substituting Equation (27) into Equation (21) and rearranging yields the social costs of monopsony as

$$\mathcal{C} = \frac{m^2}{2} \sum_{g\in\mathbf{F}} \sum_{k\in\mathbf{F}} \eta_{k,g} \frac{L_k^C}{p_g}. \tag{28}$$

Around the competitive equilibrium, $\eta_{k,g} \frac{L_k^C}{p_g} = \frac{\partial L_k}{\partial w_g}$. Equation (28) can thus be simplified further to yield

$$\mathcal{C} = \frac{m^2}{2} \sum_{g\in\mathbf{F}} \sum_{k\in\mathbf{F}} \frac{\partial L_k}{\partial w_g}. \tag{29}$$

Given that $\sum_{k\in\mathbf{F}} L_k = 1 - L_\emptyset$, the sum $\sum_{k\in\mathbf{F}} \frac{\partial L_k}{\partial w_g}$ equals $-\frac{\partial L_\emptyset}{\partial w_g}$; by condition (26), $\frac{\partial L_\emptyset}{\partial w_g} = 0$. We thus have that $\mathcal{C} = 0$.

3.3 How labor supply elasticities affect welfare

We can now ask how the welfare costs of monopsony, as reflected in Equation (21), depends on the matrix of labor supply elasticities. As in Section 2, I consider a proportional shifter of each of the cross-firm elasticities: $\eta_{f,g} = \alpha\eta^0_{f,g}$. Holding fixed the competitive allocation of labor $\vec{L}^C$, the welfare costs of monopsonistic wage-setting will approach zero as α approaches either zero or infinity:

Proposition 2. *As the labor supply elasticities approach either zero or infinity, the welfare costs of monopsonistic wage-setting will approach zero:*

$$\lim_{\alpha\to 0^+} \mathcal{C} = \lim_{\alpha\to\infty} \mathcal{C} = 0.$$

As in the introduction, it is interesting to endogenize the competitive allocation of labor. To do so I treat as fixed the hypothetical allocation of workers that would occur, were each firms to pay a wage equal to 1: $L^1_f \equiv L_f\left(1, \vec{1}\right)$. To first order, $\log L^C_k \approx \log L^1_k + \sum_{f\in\mathbf{F}\cup\{\emptyset\}} \eta_{k,f} \log p_f$, which implies that the costs of monopsonistic wage-setting will be approximately

$$\mathcal{C}^* \equiv \frac{1}{2} \sum_{g\in\mathbf{F}} \sum_{k\in\mathbf{F}} L^1_k \left(\prod_{f\in\mathbf{F}\cup\{\emptyset\}} p_f^{\eta_{k,f}} \right) p_k \eta_{k,g} \left(\frac{1}{1+\eta_{g,g}} \right) \left(\frac{1}{1+\eta_{k,k}} \right).$$

Again, $\mathcal{C}^*$ will approach zero as the elasticities approach zero. However, $\mathcal{C}^*$ need not approach zero as the elasticities become large. The large-α behavior of $\mathcal{C}^*$ will be governed by the behavior of the terms $\prod_{f\in\mathbf{F}\cup\{\emptyset\}} p_f^{\eta_{k,f}} = \prod_{f\in\mathbf{F}\cup\{\emptyset\}} p_f^{\alpha\eta^0_{k,f}} = \exp\left(\alpha \sum_{f\in\mathbf{F}\cup\{\emptyset\}} \eta_{k,f} \log p_f\right)$. If, for any firm k, the term $\sum_{f\in\mathbf{F}\cup\{\emptyset\}} \eta^0_{k,f} \log p_f > 0$ then $\mathcal{C}^*$ will become large as α diverges.

In particular, consider the case where workers' firm choices are homogeneous of degree zero in the wage vector (*i.e.* the function ν that appears in their preferences is a log function). In that case, for each firm f,

[4] A similar requirement is considered by Kline (2025).

$\sum_{f\in\mathbf{F}\cup\{\emptyset\}}\eta^0_{k,f}=0$. Assume further that each firm has a distinct productivity; let $k^*=\arg\max_{f\in\mathbf{F}}p_f$ be the firm with the greatest productivity. For such a firm:

$$\begin{aligned}\sum_{f\in\mathbf{F}\cup\{\emptyset\}}\eta^0_{k^*,f}\log p_f=\sum_{f\in\mathbf{F}\cup\{\emptyset\}\setminus\{k^*\}}\eta^0_{k^*,f}\log p_f+\eta^0_{k^*,k^*}\log p_{k^*}&=\sum_{f\in\mathbf{F}\cup\{\emptyset\}\setminus\{k^*\}}\eta^0_{k^*,f}\log p_f-\sum_{f\in\mathbf{F}\cup\{\emptyset\}\setminus\{k^*\}}\eta^0_{k^*,f}\log p_{k^*}\\&=\sum_{f\in\mathbf{F}\cup\{\emptyset\}\setminus\{k^*\}}\eta^0_{k^*,f}\left(\log p_f-\log p_{k^*}\right),\end{aligned}$$

which will be positive, because both each term $\eta^0_{k^*,f}$ and each term $\log p_f-\log p_{k^*}$ will be negative. In sum, we have the following:

Proposition 3. *Let workers' firm choices be homogeneous of degree zero, and let each firm have a distinct productivity. Treating the competitive allocation of labor as endogenous, as the labor supply elasticities approach infinity, the welfare costs of monopsonistic wage-setting will diverge:*

$$\lim_{\alpha\to\infty}\mathcal{C}^*=\infty.$$

4 Simulations of a Fully-Specified Model

In this section I simulate a fully-specified model of the labor market. Doing so serves two purposes. First, these simulations test the results from previous sections, which relied on first- or second-order Taylor approximations. I confirm that both the misallocation of workers and the costs of monopsonistic wage-setting will approach zero as labor elasticities approach zero. Second, given that the costs of monopsonistic wage-setting needn't be monotonic in the elasticities of labor supply, the simulations illustrate that those costs can be increasing across a plausible range.

A model of a differentiated duopsony. I consider a simple model of two firms, with no nonemployment option: $\mathbf{F}=\{high, low\}$. The *high* firm is 20% more productive than the *low* firm: $p_{high}=1.2$, $p_{low}=1$. I retain the Nash-Bertrand definition of monopsony from Equation (7), the compensating variation measure of welfare from Equation (12), and the random utility model of labor supply from Equation (10). In particular, each worker $i\in[0,1]$ will be employed at firm

$$f_i\in\underset{f\in\{high,low\}}{\arg\max}\left\{\alpha\log\left(w^M_f\right)+e_{i,f}\right\},$$

where the terms $e_{i,f}$ follow a standard Gumbel distribution while the parameter α measures the importance of wages in workers' firm choice. I will use α as an elasticity-shifting parameter to assess how the misallocation of workers and the costs of monopsonistic wage-setting are affected by the elasticity of labor supply.

Given these preferences, the proportion of workers employed at each firm f is

$$L_f=\frac{w_f^\alpha}{w^\alpha_{high}+w^\alpha_{low}},$$

and the own-wage elasticity of labor supply to that firm will be

$$\eta_{f,f}=\alpha\left(1-L_f\right). \tag{30}$$

In equilibrium, the *high* firm will pay a higher wage than the *low* firm, and so will employ a greater proportion of workers: $L_{high} > L_{low}$. As a result, the *high* firm will face a lower labor supply elasticity: $\eta_{high,high} < \eta_{low,low}$, and so will pay a less generous markdown: $w_{high}/p_{high} < w_{low}/p_{low}$. Given that workers' firm choices are homogeneous of degree zero in wages, firm *high* will be inefficiently small, and aggregate output will be inefficiently low.

I use this model for two reasons. First, it is simple, which minimizes the degrees of freedom which I must consider. Second, per Equation (30), the labor supply elasticities facing firms are very much endogenous objects in this model. As such, the model is well-designed to assess the limitations of my earlier analysis which effectively treated labor supply elasticities as a structural parameter.

Computation. I find the monopsony equilibrium by numerically solving the labor-market clearing condition

$$L_{high} = \frac{w_{high}^{\alpha}}{w_{high}^{\alpha} + w_{low}^{\alpha}}; \quad w_{high} = \frac{p_{high}}{1 + \frac{1}{\alpha(1-L_{high})}}; \quad w_{low} = \frac{p_{low}}{1 + \frac{1}{\alpha L_{high}}}.$$

I calculate welfare effects by adding firms' compensating variation to workers' compensating variation; the latter I simulate by drawing 10000 vectors of Gumbel random variables.

Elasticities. Panel A of Figure 1 depicts how the elasticity-shifting parameter α affects the labor supply elasticity facing each firm. Equation (30) suggests that — *holding the allocation of workers fixed* — increasing α will increase the labor supply elasticity facing each firm proportionately. However increasing α will also increase the mass of workers employed at the *high* firm. This suppresses the elasticity facing the high-type firm for large values of α.

Misallocation. Panel B demonstrates how the proportion of workers employed at the *high* firm changes as a function of the parameter α, in both competitive equilibrium and monopsonistic equilibrium. Under both solution concepts, employment at high-type firms increases as a function of α. However the *high* firm faces a greater markdown than does the low-type firm, and so the *high* firm's competitive employment is greater than its monopsonistic employment. Overall, the gap between competitive employment and monopsonistic employment is largest when the parameter α is about 15. As shown in Panel A, a value of $\alpha = 15$ corresponds to a mean labour supply elasticity of about 6.1.

Welfare. In Panel C I depict the cost of monopsonistic wage-setting, in terms of both output and welfare.[5] Like misallocation, lost output is maximized when α is about 15. The overall welfare cost is maximized when α is about 22 (which corresponds to a mean labour supply elasticity of 7.7). The welfare cost of monopsonistic wage-setting then decreases slowly in α; with an α parameter equal to 40 the welfare cost is 87% of its maximal value.

5 Conclusion

This paper demonstrates that monopsonistic behavior can have substantial effects, even when firms face large elasticities of labor supply. This result has two key implications.

First, economists cannot safely conflate conduct-testing with estimates of structural elasticities. Insofar as we are interested in whether monopsony is an accurate model of wage-setting, we should test that hypothesis explicitly (as, for example, in Roussille and Scuderi, 2025).

[5] The welfare cost, as defined in subsection 3.1, can be shown to equal the loss in output as well as a term measuring workers' non-pecuniary preferences over employment (Townsend and Allan, 2025).

Second, the necessary empirical exercise will depend on the outcome in which we are interested. Much work in monopsony is simply interested in whether monopsonistic wage-setting affects wages; for such exercises, a large labor supply elasticity does indeed ensure that monopsony has negligible effects. However if we are interested in misallocation, then a large labor supply elasticity does not ensure that the effects of monopsony are negligible.

I have also shown that distortions depend on the entire matrix of cross-firm labor supply elasticities, rather than just its diagonal. This result suggests that a 'sufficient statistic' analysis, in which misallocation is approximated using credibly identified elasticities, will not be feasible: in a typical labor market, reduced-form identification of the entire matrix of labor supply elasticities will not be feasible.

It is also worth musing on my result that, to second order, the welfare consequences of monopsonistic wage-setting are the same under both random utility and search. This does not mean that we should be indifferent between these models. Rather, my result shows that these models have similar welfare prescriptions *conditional on the matrix of between-firm labor supply elasticities*. These elasticities will generally be different in a search model than in a random utility model, both because such models restrict that matrix and because the traditions associated with each framework tend to impose different estimation routines. My result does suggest that, rather than evaluating these models by asking whether we find their microfoundations natural, we should evaluate them by asking whether they yield the correct elasticities of labor supply.

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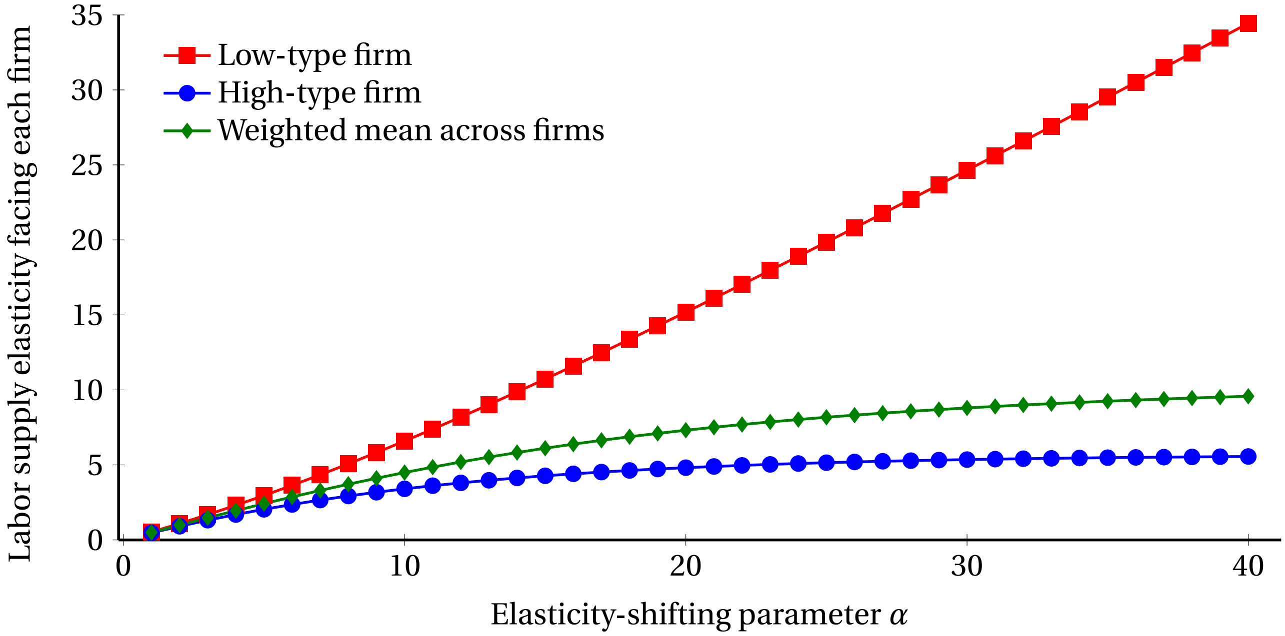
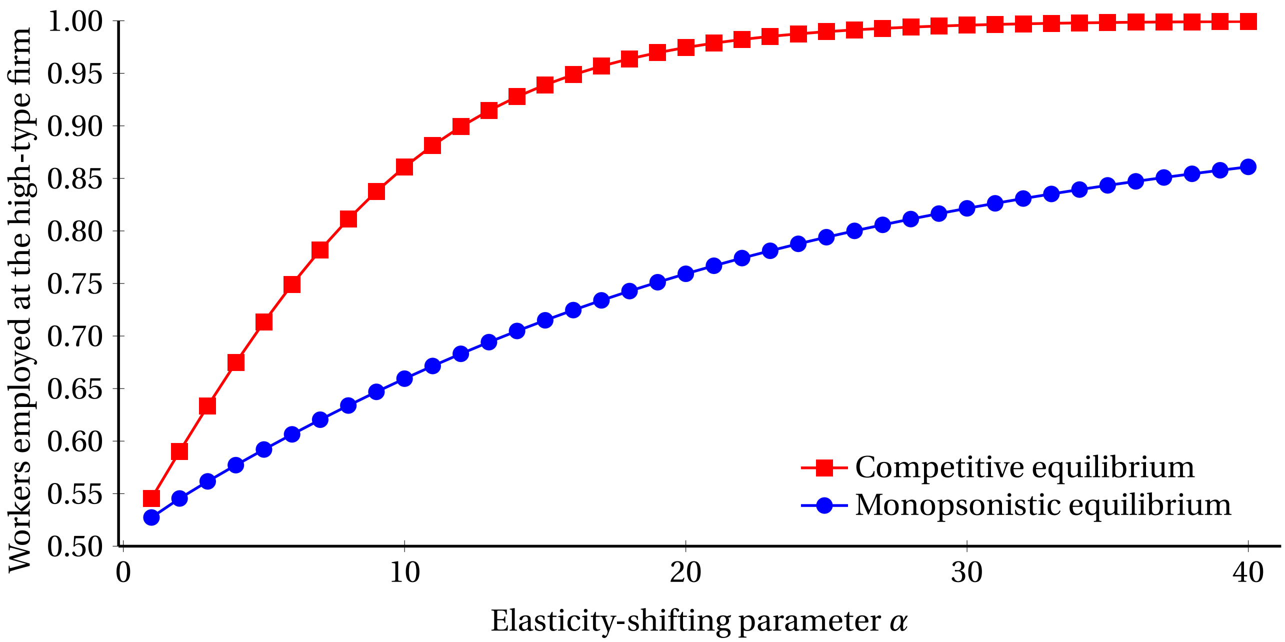
Figure 1: Simulation results

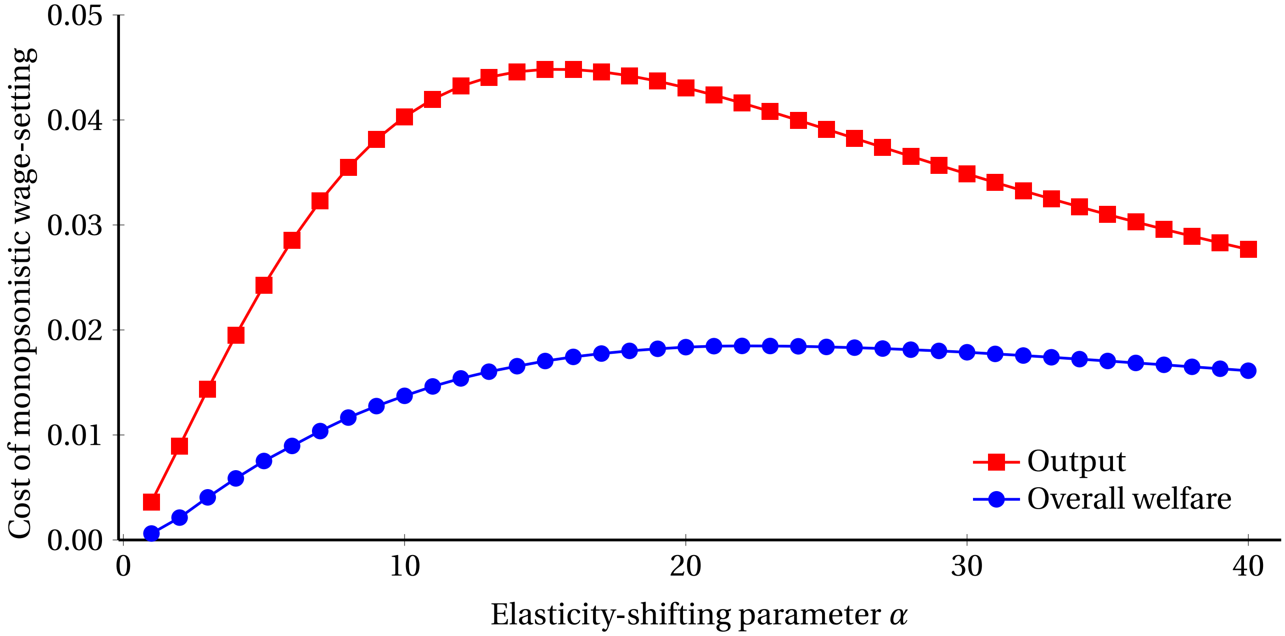


Panel A: Labor Supply Elasticities



Panel B: The Allocation of Workers

Figure 1 (continued): Simulation results



Panel C: The Cost of Wage-Setting

Figure 1 presents results from simulations of the duopsony labor market model described in Section 4. In each panel we vary the elasticity-shifting parameter α across the x-axis.

Panel A depicts the labor supply elasticities facing both the *low* firm (in red) and the *high* firm (in blue), given the monopsonistic equilibrium allocation of workers. In addition, the green series depicts the average of these elasticities, weighting firms by their (monopsonistic) employment.

Panel B depicts the proportion of workers who are employed at the *high* firm in either the competitive (in red) equilibrium or the monopsonistic equilibrium (in blue).

Panel C depicts the cost of monopsonistic wage-setting. In the red series we measure cost by comparing output under monopsonistic wage-setting to output under the competitive equilibrium. In the blue series we report the overall welfare cost, which additionally accounts for workers' non-pecuniary preferences over firms.