Monopsony amplifies distortions from progressive taxes

David Berger
Duke University, NBER

Kyle Herkenhoff
University of Minnesota, NBER

Simon Mongey
University of Chicago, Federal Reserve Bank of Minneapolis, NBER

Negin Mousavi
Ernst and Young

ASSA 2024

The views expressed herein are those of the authors and not those of the Federal Reserve System.

Introduction

- A growing number of studies argue that monopsony is pervasive
- A separate literature on taxation measures effects of income tax progressivity (HSV 2017)

Introduction

- A growing number of studies argue that monopsony is pervasive
- A separate literature on taxation measures effects of income tax progressivity (HSV 2017)

This paper

- Show that income tax policy and market power in labor markets interact meaningfully

Introduction

- A growing number of studies argue that monopsony is pervasive

- A separate literature on taxation measures effects of income tax progressivity (HSV 2017)

This paper

- Show that income tax policy and market power in labor markets interact meaningfully

Why?

- More progressive taxes make labor supply *more inelastic*
- In imperfectly competitive labor markets, firm internalize these effects

Introduction

- A growing number of studies argue that monopsony is pervasive

- A separate literature on taxation measures effects of income tax progressivity (HSV 2017)

This paper

- Show that income tax policy and market power in labor markets interact meaningfully

Why?

- More progressive taxes make labor supply *more inelastic*
- In imperfectly competitive labor markets, firm internalize these effects
- **Causes misallocation**: higher paying firms attract fewer workers because tax progressivity flattens the post-tax wage distribution.

Road map

- First establish these mechanisms in an environment with homogeneous firms.
- Extend to heterogeneous firms, which adds additional misallocation force
- Simply quantification:
  - Misallocation and labor supply effects induced by progressive taxes lower output by 1-6%
  - Caveat: we include none of the benefits of progressivity like redistribution or insurance
- Next steps: adding Bewley so we can assess optimal progressivity (and do much more!)

Tax progressivity in a simplified BHM economy

The household problem is:

$$\max_{C,n_j} \quad \log\left(C - \frac{1}{\overline{\varphi}^{1/\varphi}}\frac{N^{1+1/\varphi}}{1+1/\varphi}\right)$$

$$N = \left[\int n_j^{\frac{\eta+1}{\eta}}\, dj\right]^{\frac{\eta}{\eta+1}}$$

subject to

$$C = \int \lambda w_j^{1-\tau} n_j \, dj + \Pi.$$

Aggregate pre-tax wage index W:

$$\lambda W^{1-\tau} N = \int \lambda w_j^{1-\tau} n_j \, dj$$

The post-tax wage per worker $\widetilde{w}_j = \lambda w_j^{1-\tau}$

FOCs

Household optimal labor supply is determined by:

$$
\begin{aligned}
n_j &= \left(\frac{w_j}{W}\right)^{(1-\tau)\eta} N \\
W &= \left[\int_j w_j^{(1-\tau)} (1+\eta)\, dj\right]^{\frac{1}{(1-\tau)(1+\eta)}} \\
N &= \overline{\varphi}\left(\lambda W^{1-\tau}\right)^{\varphi}.
\end{aligned}
$$

Progressivity distorts labor supply (N) and misallocates workers (W)

FOCs

Household optimal labor supply is determined by:

$$
\begin{aligned}
n_j &= \left(\frac{w_j}{W}\right)^{(1-\tau)\eta} N \\
W &= \left[\int_j w_j^{(1-\tau)} (1+\eta)\, dj\right]^{\frac{1}{(1-\tau)(1+\eta)}} \\
N &= \overline{\varphi}\left(\lambda W^{1-\tau}\right)^{\varphi}.
\end{aligned}
$$

Progressivity distorts labor supply (N) and misallocates workers (W)

Higher progressivity lowers the elasticity of the firm's labor supply curve

$$\varepsilon_j = \frac{\partial \log n_j}{\partial \log w_j} = \eta(1-\tau)$$

Firms

Firms operate a constant returns to scale production technology $y_j = z_j n_j$

They take W and N as given and solve:

$$\pi_j = \max_{w_j} z_j n_j - w_j n_j$$

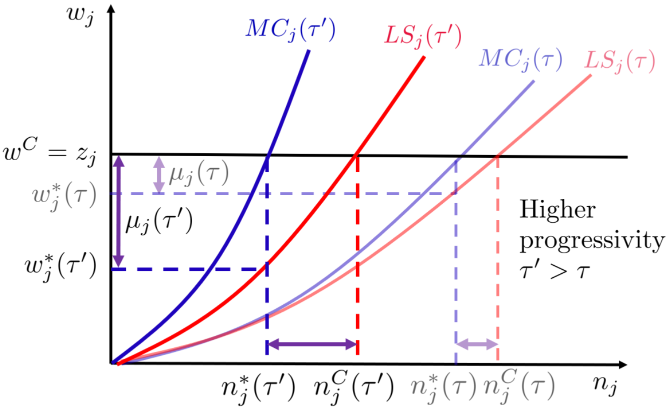
subject to

$$n_j = \left(\frac{w_j}{W}\right)^{(1-\tau)\eta} N.$$

Firm optimality implies the wage:

$$w_j = \mu z_j \ , \ \mu = \frac{\varepsilon}{\varepsilon + 1} \ , \ \varepsilon = (1-\tau)\eta.$$

Partial-equilibrium effects of increasing tax progressivity to $\tau' > \tau$



Higher progressive taxes mean ***wider markdowns*** and ***lower employment***

Homogeneous firm results

Assume firms are homogeneous: $z_j = Z$ and HH have GHH preferences then:

$$\begin{aligned} W &= \mu Z \ , \ \mu = \frac{(1-\tau)\eta}{(1-\tau)\eta + 1} \\ N &= \overline{\varphi}\left(\lambda W^{1-\tau}\right)^{\varphi} \ , \\ Y &= ZN. \end{aligned}$$

In terms of primitives, output is therefore

$$Y = \underbrace{\left[\frac{(1-\tau)\,\eta}{(1-\tau)\,\eta + 1}\right]^{\varphi(1-\tau)}}_{\text{Monopsony}} \underbrace{\overline{\varphi}\lambda^{\varphi} Z^{1+\varphi(1-\tau)}}_{\text{Competitive}}$$

Higher progressive taxes ***lower output*** and ***amplify*** inefficiencies due to monopsony

Heterogeneous firm results

Same three equations as above determine $\{Y, W, N\}$, with the additional expression for aggregate TFP, Z:

$$Z = \left[\int z_j^{\frac{(1+\eta)(1-\tau)}{1+\eta(1-\tau)}} dj \right]^{\frac{1+\eta(1-\tau)}{(1+\eta)(1-\tau)}} .$$

Progressive taxes now have three roles

1. Standard distortion in N
2. Monopsony distortion due to wider markdowns
3. **NEW:** Lower Z due to misallocation of labor across heterogeneous firms

When jobs are imperfect substitutes and tax progressivity affects wages more at high wage, high productivity firms, distorting employment away from these firms

Understanding misallocation effect

Take a second order approx to Z:

$$\log Z = \mathbb{E}\Big[\log z_j\Big] + \underbrace{\frac{(1+\eta)(1-\tau)}{1+\eta(1-\tau)}}_{\text{Decreasing in } \tau} \mathbb{V}\Big[\log z_j\Big].$$

- Fixing $\eta < \infty$, more productivity dispersion raises TFP.
- As taxes become more progressive, the gains from greater productivity dispersion are mitigated
- Higher productivity workers sorting into higher productivity firms would compound this TFP loss

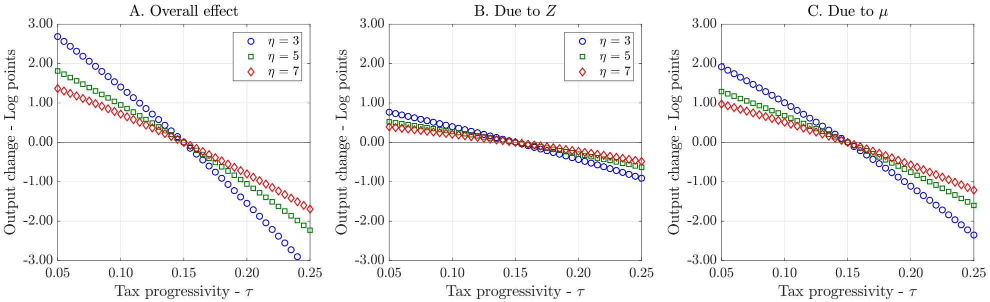
Simple Quantification

- Estimates of τ range from 0.05 and 0.25, our baseline is 0.15
- Solving in log deviations gives

$$\widehat{y} = \big(1 + \varphi(1 - \overline{\tau})\big)\widehat{z} + \varphi\big(1 - \overline{\tau}\big)\widehat{\mu}.$$

- We vary τ holding $\mathbb{E}[\log z_j]$ and $\mathbb{V}[\log z_j]$ fixed
- Parameters
  - $\overline{\tau} = 0.15$ (hold exponents fixed)
  - Frisch, $\varphi = 0.75$
  - $\mathbb{V}[\log z_j]$ is set to capture a 40 percent standard deviation of log productivity
  - We considers $\eta \in \{3, 5, 7\}$ corresponding to $\mu \in \{0.75, 0.83, 0.88\}$
- **How do the monopsony distortion, $\widehat{\mu}$, and the misallocation distortion, $\widehat{z}$ change?**

Effect of progressive taxes on output via misallocation and markdowns



- Changes in progressivity within the empirical range can move output by up to 6 percent
- Markdown effect bigger than misallocation effect
- Higher firm productivity dispersion and lower labor supply elasticities amplify losses
- Losses are **big** compared to existing optimal tax lit

Next steps add Bewley and do full quantification

Environment - Study a stationary general equilibrium economy in which ...

- Heterogeneous households consume, save, choose (i) firm to work at, (ii) hours to work
- Heterogeneous firms strategically set wages facing dist. of household labor supply

Tax progressivity

- More progressive taxes make labor supply *more inelastic*
- In imperfectly competitive labor markets, firms internalize these effects

Positive

- Match joint distribution of marginal propensities to *consume* and *earn*, by income

  Characterize (i) Supply elasticities, (ii) Sorting, (iii) Pass-through and (iv) Optimal Progressivity

▸ Literature

Conclusion

- Show in simple model monopsony power and tax progressivity interact meaningfully
- Highlight both direct markdown and misallocation effects due to firm heterogeneity
- Simple quantification suggests costs due to monopsony power are large and potentially dwarf gains due to redistribution and insurance
- Next steps: unified theory of consumption, savings, labor supply, labor market power

THANK YOU!

APPENDIX SLIDES

Tax progressivity in a simplified BHM economy

- Household

$$\max_{C,\{n_j\}} \quad \log\left(C - \frac{\mathcal{N}^{1+1/\varphi}}{1+1/\varphi}\right) \quad , \quad \mathcal{N} = \left[\int n_j^{\frac{\eta+1}{\eta}}\, dj\right]^{\frac{\eta}{\eta+1}}$$

subject to $$C = \sum_j \left(1-\tau_0\right)\left(w_j n_j\right)^{1-\tau_1} + \Pi$$

Tax progressivity in a simplified BHM economy

- Household

$$\max_{C,\{n_j\}} \quad \log\left(C - \frac{\mathcal{N}^{1+1/\varphi}}{1+1/\varphi}\right) \quad , \quad \mathcal{N} = \left[\int n_j^{\frac{\eta+1}{\eta}} dj\right]^{\frac{\eta}{\eta+1}}$$

subject to
$$C = \sum_j \left(1-\tau_0\right)\left(w_j n_j\right)^{1-\tau_1} + \Pi$$

- Firm

$$y_j = Z n_j \quad , \quad n_j = \left(\frac{w_j}{\mathcal{W}}\right)^{\varepsilon}\mathcal{N} \quad , \quad w_j = \frac{\varepsilon}{\varepsilon+1}Z \quad , \quad \varepsilon = \frac{(1-\tau_1)\,\eta}{1+\tau_1\eta}$$

Tax progressivity in a simplified BHM economy

- Household

$$\max_{C,\{n_j\}} \quad \log\left(C - \frac{\mathcal{N}^{1+1/\varphi}}{1+1/\varphi}\right) \quad , \quad \mathcal{N} = \left[\int n_j^{\frac{\eta+1}{\eta}} dj\right]^{\frac{\eta}{\eta+1}}$$

subject to $\quad C = \sum_j \left(1-\tau_0\right)\left(w_j n_j\right)^{1-\tau_1} + \Pi$

- Firm

$$y_j = Zn_j \quad , \quad n_j = \left(\frac{w_j}{\mathcal{W}}\right)^{\varepsilon}\mathcal{N} \quad , \quad w_j = \frac{\varepsilon}{\varepsilon+1}Z \quad , \quad \varepsilon = \frac{(1-\tau_1)\,\eta}{1+\tau_1\eta}$$

* Additional distortion of progressive taxes

$$\mu = \left(1-\tau_1\right)\frac{\eta}{\eta+1} \quad , \quad Y = \underbrace{\left[\left(1-\tau_1\right)\frac{\eta}{\eta+1}\right]^{\frac{\varphi(1-\tau_1)}{1+\varphi\tau_1}}}_{\text{Monopsony term}} \times \underbrace{\left[\left(1-\tau_0\right)\left(1-\tau_1\right)Z^{\frac{\varphi+1}{\varphi}}\right]^{\frac{\varphi}{1+\varphi\tau_1}}}_{\text{Competitive distortion, } W=Z}$$