

Firm Market Power, Worker Mobility, and Wages in the US Labor Market

by Sadhika Bagga (UT Austin)

Discussion:
Benjamin Schoefer (UC Berkeley)

NBER Wage Dynamics in the 21st Century
September 2022

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by Sadhika Bagga (UT Austin, **on job market this year**)

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Roadmap

- **Fantastic paper – congratulations!**
 - Sadhika Bagga presents an important new interpretation of key macro time series, tractably integrating a novel mechanism into a rich labor market model, supporting its quantitative predictions with compelling empirical evidence.
- Quick summary
- Zoom in:
 - EE and employer concentration
 - Wages and employer concentration
- Zoom out:
 - Broader debate about wage setting models

One-Slide Summary

Model

- Search and matching model of the labor market
- Job ladder with on the job search
 - Firms differ in productivity
- Wage setting: bargaining with competing employers that match offers (Cahuc, Postel-Vinay, Robin)
 - Outside options affect wages, and outside job offers are outside options
- Key feature: **finite numbers of firms**
 - Mechanical effect on EE: fewer opportunities to switch
 - May change wage bargaining (Jarosch, Nimczik, Sorkin, but for on the job searchers)

Quantitative results: fewer firms per worker...

- ⇒ Lower EE rate
- ⇒ Lower wages / labor share

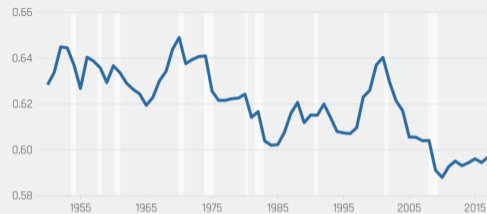
Empirical evidence (panel of local labor markets):

- Firm-per-worker counts positively correlated with EE and wages

And: test predictions for wage dynamics of stayers and switchers as a function of firm count

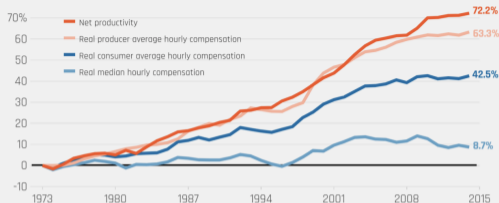
The labor share in the United States has declined

Share of labor compensation in Gross Domestic Product at current national prices for the United States, 1950-2017. Recessions are shaded.



The decoupling of wages from productivity in the United States

Cumulative percent change in productivity growth, real average compensation (consumer and producer), and real median compensation, 1973-2014



Employer-to-Employer Transitions Rate

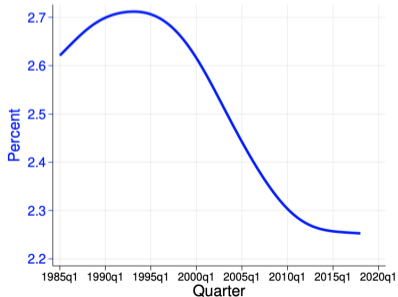
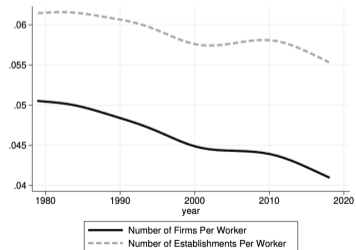


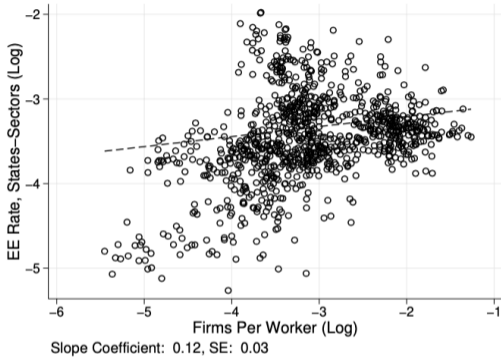
Figure 4: Firms and Establishments per Worker, 1979-2018



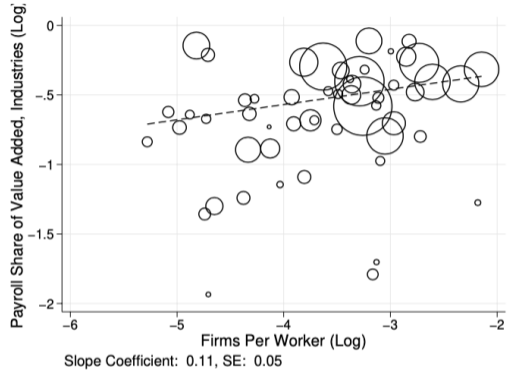
Notes: This figure shows the HP-filtered trends of the ratio of the number of firms and establishments to the number of workers in the US economy, over 1979-2018 using the Business Dynamics Statistics.

Sources: Schoefer (2020 WCEQ) top row; Bagga (2022) bottom row

EE

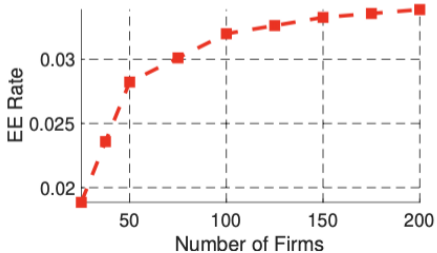
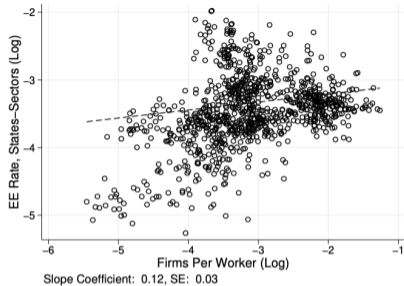


Labor share

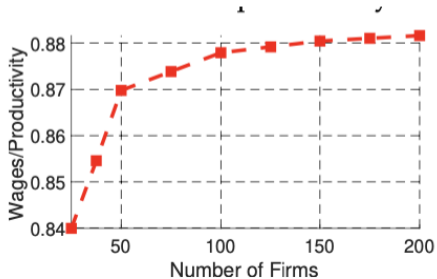
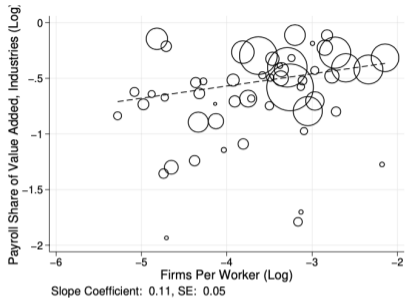


Advice: use binned scatter plots too!

EE



Labor share



Understanding the EE Effects 1/4: Potential Mechanism

Potentially “mechanical” (in a good way!):

- Fewer firms mean fewer opportunities to switch between firms
- Hence, EE rate falls
- Example: if there is only 1 firm, no EE

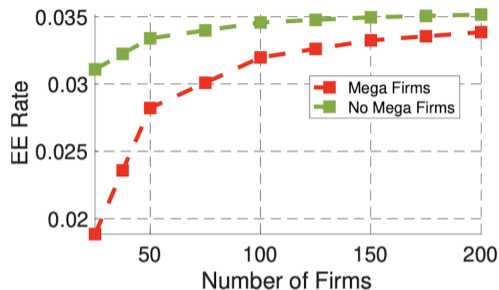
But, on second thought, less obvious! EE can fall in response to fewer firms per worker because:

- job offer arrival rate falls
- share of offers that are preferable to current job falls (existing jobs may become better or job offers become worse)

Understanding the EE Effects 2/4: Model Logic

- There are $N = 5$ different firm types $x \in \{1, 2, \dots, N\}$, with type-specific productivity θ_x
 - Within each firm type, there are $n_x > 1$ firms
 - As number of firms shift, job offer arrival rate λ_1 is held fixed but each firm's share of the vacancy pool effectively scales up to hold fixed the total job offers and their distribution across productivity-types
 - So why does EE fall as firm counts shrink?
 - Because the share of wasteful encounters increases: workers accidentally run into their current employer
 - Of what nature are these disappearing EE switches?
- ⇒ Fewer **horizontal** switches (across identical firms, of the same θ -type) – same vertical EE
- Judgment call – but model must take a stance, which is:
*“If the worker samples from any one of the remaining $(n - 1)$ firms at productivity θ_i , she is indifferent between staying at θ_i or joining the poaching firm as both firms offer the same value. In such instances of a tie between the incumbent and poaching firms, **the worker is equally likely to be a job stayer or job switcher.**”*

Understanding the EE Effects 3/4



“In the extreme case, suppose the most productive tier of the job ladder comprises only one firm, then all employees of that firm lose the option of making a job switch. As the most productive firms are also the largest in the model, a higher share of employees is prevented from making EE transitions if the incumbent firm faces no competition.”

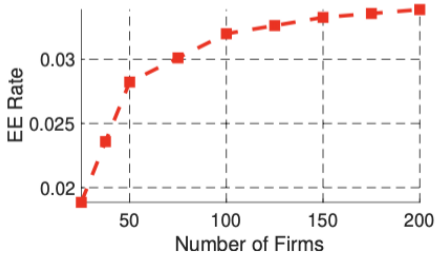
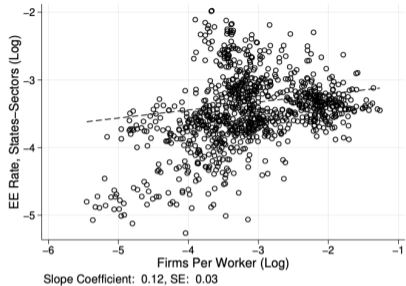
Conjecture: model can generate a completely flat line with alternative assumption: 0% rather than 50% of meetings with identical firms result in EE (e.g., ϵ switching cost)

⇒ Surprisingly difficult to link EE with employer concentration!

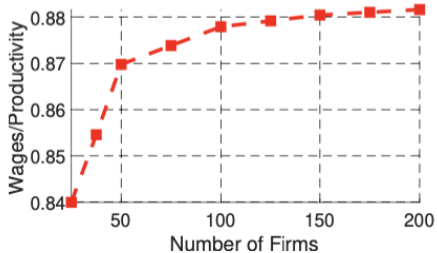
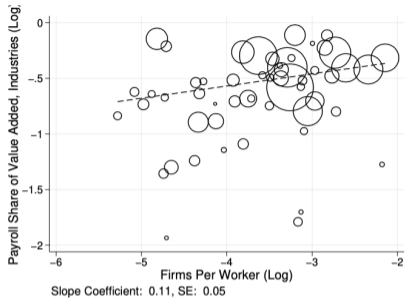
Understanding the EE Effects 4/4: Ideas for Additional Checks

- Explore type of EE transition that is affected by employer concentration: horizontal or vertical?
 - If indeed exclusively horizontal: pure surplus allocation channel (free entry aside)
- Can EE become insensitive to employer concentration if you adopt alternative convention that 0% of meetings between identical firms result in EE?
- I wouldn't be surprised if a stronger link between EE and employer concentration would boost the role of the latter in labor market outcomes.
- Conjecture: the horizontal property is related to your assumption of only $N = 5$ productivity types. There are always at least 2 firms per type. Higher N could generate vertical action due to "missing rungs" on the job ladder.
- Can one provide and calibrate an analytical expression for the EE rate that features firm size?
 - Potentially suppose a worker starting in the bottom rung and compute number of different employers (EE transitions) over the course of the life of that employment cycle (Perhaps: along the lines of Mercan and Schoefer 2021 footnote 12)
- Potential microfounded for horizontal switches: amenity shocks? (I think this is easy, see, e.g., Mercan and Schoefer (2021) main model vs App E)

EE



Labor share



Understanding the Wage Effects 1/5

Nash with a twist: outside option is either unemployment or the best job offer you received in the past, whichever has a higher value.

Cahuc, Postel-Vinay and Robin

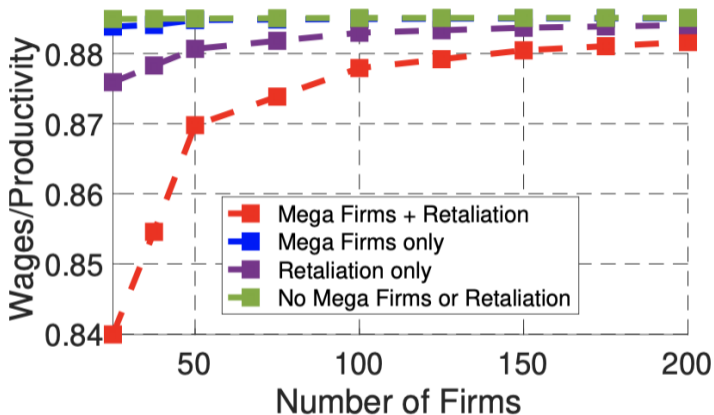
Key focus is on employed workers running into job offer by other firm.

Winning (poaching or retaining) firm h beats firm i because its productivity is $\theta_h > \theta_i$.

Worker's value W from working at winner h is bargained drawing on losing firm i as outside option:

$$W(\theta_h, \theta_i) = \overbrace{W(\theta_i, \theta_i)}^{\text{OO = max value (full surplus) from losing firm}} + \underbrace{\alpha}_{\text{Worker's barg. power}} \cdot \overbrace{(V(\theta_h) - W(\theta_i, \theta_i))}^{\text{Surplus: joint value of new match minus losing firm's full value as OO}}$$

Understanding the Wage Effects 2/5: Surprise!



Mechanical wage effect of fewer firms (while keeping total vacancies constant):

- More wasteful encounters \Rightarrow fewer rebargaining events.
- But these wasteful encounters are among peer firms only!
- Solution: add large firms that can exert “extra” market power over workers

Understanding the Wage Effects 3/5

Value split with *winning* firm h depends on value from losing firm i :

$$W(\theta_h, \theta_i) = W(\theta_i, \theta_i) + \alpha \cdot (V(\theta_h) - W(\theta_i, \theta_i))$$

Outside option: worker appropriates full value of *losing* firm – **first consider standard model**:

$$\begin{aligned} (\gamma + \delta)\widetilde{W}(\theta_i, \theta_i, \theta_h) &= y(\theta_i) + \delta U && \text{Opportunities to move up the job ladder} \\ &+ \lambda_1 \left\{ \sum_{x=i+1}^N \left(W(\theta_x, \theta_i) - \widetilde{W}(\theta_i, \theta_i, \theta_h) \right) n_x f(\theta_x) \right. \\ &+ \left. \left(W(\theta_i, \theta_i) - \widetilde{W}(\theta_i, \theta_i, \theta_h) \right) (n_i - 1) f(\theta_i) \right\} && \text{Run into peer firm} \end{aligned} \tag{6}$$

Understanding the Wage Effects 4/5

Value split with *winning* firm h depends on value from losing firm i :

$$W(\theta_h, \theta_i) = W(\theta_i, \theta_i) + \alpha \cdot (V(\theta_h) - W(\theta_i, \theta_i))$$

Outside option: worker appropriates full value of *losing* firm – with new “retaliation channel”, which depresses the boost from running into a firm: (Jarosch, Nimczik, Sorkin, but for OTJS!)

$$(\gamma + \delta)\widetilde{W}(\theta_i, \theta_i, \theta_h) = y(\theta_i) + \delta U \quad \text{Opportunities to move up the job ladder}$$

$$+ \lambda_1 \left\{ \sum_{x=i+1}^N \left(W(\theta_x, \theta_i) - \widetilde{W}(\theta_i, \theta_i, \theta_h) \right) n_x f(\theta_x) \right.$$

Retaliation channel:
won't get to match
with (winning)
firm again

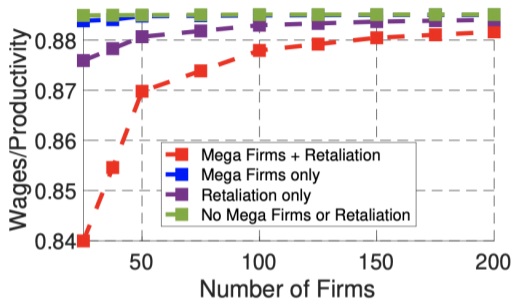
$$- \left(W(\theta_h, \theta_i) - \widetilde{W}(\theta_i, \theta_i, \theta_h) \right) f(\theta_h)$$

Run into peer firm

$$+ \left(W(\theta_i, \theta_i) - \widetilde{W}(\theta_i, \theta_i, \theta_h) \right) (n_i - 1) f(\theta_i) \left. \right\}$$

(6)

Understanding the Wage Effects 5/5



- Productive/large firms lower their new hires' OO and mark down wages (purple line)
- But model requires a large share of those firms (red line)
- **Testable prediction: are employer size-wage gradient slopes and rent sharing elasticities lower in more concentrated markets? Trend declines?** (~ labor market version of Autor, Dorn, Katz, Patterson, Van Reenen 2020)

SKIP: Understanding the Wage Effects 6/5

- Calibrate OO expression: which share of the OO's value stems from the prospect of rematching with the competing employer, and what are the sources of this large an effect?
- Could bring the mechanism to quantitative light at the micro level and illustrate how a *specific* wage bargaining outcome depends on the retaliation channel?
 - Micro experiment: zoom into a specific case of worker at firm θ_i meeting a firm $\theta_h > \theta_i$ and highlight wage effect for firm counts within θ_h -bin that go from 1 to ∞ ; surgically (ad hoc) having firm count affect only OO \widetilde{W}
 - Run for various (θ_h, θ_i) combinations and compare wage effect of OO in infinite to finite case to tease out where the mechanism matters most
 - Complement with model intuitions

Roadmap

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◦ Zoom out:

- Broader debate about wage setting models

Zooming Out: OO Effects in the Data?

- What happens if an employed worker obtains an outside offer?
- The class of model considered here has clear predictions: worker rebargains wage even if existing match dominates the offer;
- Otherwise, switch into next job and use previous match to bargain for better deal in new job
- The wage effects in this paper crucially rely on this mechanism.
- Not present in other wage setting models
 - Wage posting
 - Bargaining w/ unemployment as outside option
 - Asymmetric info / job offers not verifiable
 - Hall-Milgram (2008) credible bargaining
 - Why would losing firm join the bargaining? Suppose ϵ cost.

Zooming Out: OO Effects in the Data?

Ideal empirical tests?

- RCT dropping dominated job offers on employed workers and track wage responses (of stayers)?
- Do new hires' previous firms' wages causally affect current wages at new employer (beyond selection)?

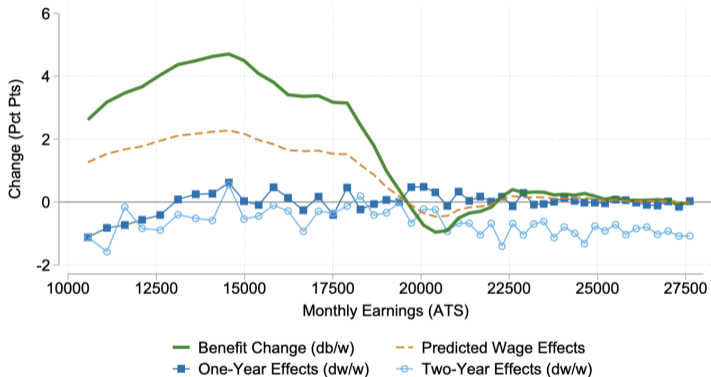
Quantitatively compare empirical wage dynamics to model predictions.

I wouldn't be surprised if this commonly used model greatly overstates prevalence and intensity of offer matching in the data.

Related example: empirical test of predictions from Nash bargained wages to unemployment as outside option

Zooming Out: OO Effects in the Data?

2001 Reform



Austrian UI benefit reforms; Jäger, Schoefer, Young, Zweimüller (2020): “Wages and the Value of Nonemployment”; (similar results for recent hires out of unemp.)

Zooming Out: OO Effects in the Data?

Elsby and Gottfries (2021): "Firm Dynamics, On-the-job Search and Labor Market Fluctuations":

"Empirical evidence on the propensity for employers to match offers remains limited, but the evidence available suggests only a **modest propensity**. [...]

Brown and Medoff (1996) report that about a third of respondents thought their employers would match.

Similarly, based on his interviews with employers, Bewley (1999, p.99) reports that most "made no counteroffers, or made them only rarely or to key people." [...]

Most recently, Di Addario et al. (2020) [...] find that only a small share of wage variation can be attributed to firm origin effects, contrary to the implications of pervasive offer matching."

Zooming Out: OO Effects in the Data?

Di Addario, Kline, Saggio, and Sølvssten (forthcoming): It Ain't Where You're From, It's Where You're At: Hiring Origins, Firm Heterogeneity, and Wages.

Augmented AKM model incl previous firm ("origin effect") besides current firm ("destination"):

$$y_{im} = \alpha_i + \underbrace{\psi_{j(i,m)}}_{\text{"destination effect"}} + \underbrace{\lambda_{h(i,m)}}_{\text{"origin effect"}} + X'_{im}\delta + \varepsilon_{im}$$

Comparing R^2 values:

	Pooled
AKM	0.7199
AKM (Gender-Interacted)	0.7349
Origin Effects	0.5809
Origin Effects (Gender-Interacted)	0.5871
DWL	0.7245
DWL (Gender-Interacted)	0.7427

Note: This table presents the goodness of fit (R^2) from various models for th

Zooming Out: OO Effects in the Data?

Including separate origin effects and destination (~ AKM) firm FEs:

Percent of Total Variance Explained by

Worker effects	28.52%
Destination firm effects	23.81%
Origin effects	0.69%
Covariance of worker, destination	16.46%
Covariance of worker, origin	1.06%
Covariance of destination, origin	0.26%
X' δ and associated covariances	1.66%
Residual	27.55%

Standard AKM:

Percent of total variance explained by

Worker effects	29.83%
Firm effects	23.78%
Covariance of worker, firm effects	16.70%
X' δ and associated covariances	1.69%
Residual	28.01%

Zooming Out: OO Effects in the Data?

German Socioeconomic Panel (2019): our custom survey used in Jäger, Roth, Roussille, Schoefer (2021)

“Imagine that **you received a job offer with a 30% higher salary** from another employer and that the job is otherwise identical to your current job. Do you think you could use this outside offer in your salary negotiations with your current employer?”

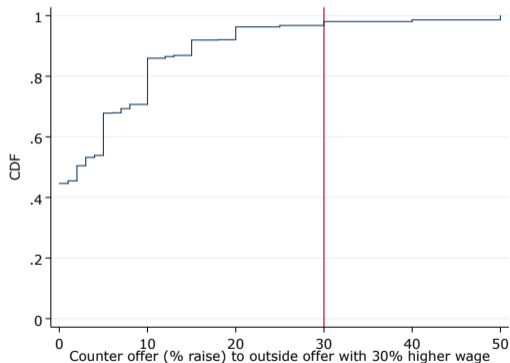
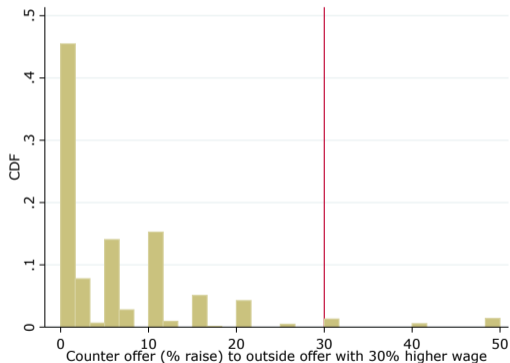
Yes: 48%

No: 62%

Zooming Out: OO Effects in the Data?

Our survey continued:

“Imagine that you were contemplating to switch your employer. **How much more would your current employer be willing to pay** to ensure that you stay in your current position?”



Conclusion

- Fantastic paper offering an important new interpretation of key time series of the aggregate labor market, tractably integrating a novel mechanism into a rich labor market model, supporting its quantitative predictions with compelling empirical evidence.
- Much more material in the full paper
- Greatly enjoyed reading this great paper and learned a lot
- Looking forward to following Sadhika Bagga's research agenda!