

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

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September 16, 2022
NBER Wage Dynamics in the 21st Century

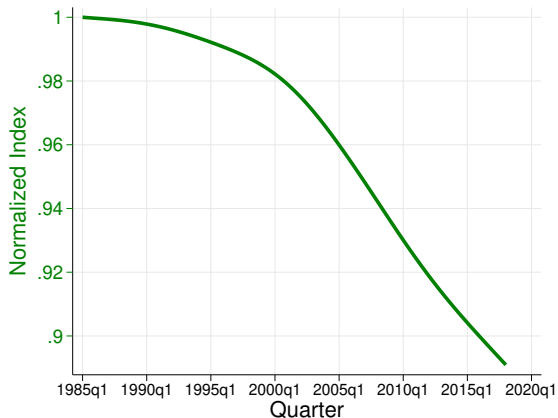
Secular Trends in the US from 1980s to 2010s

1. Declining wages relative to productivity
2. Decreasing Employer-to-Employer (EE) transitions rate
3. Diminishing employer firms per employed workers in the labor market

What is the role of decreasing number of employers per worker in driving the decline in EE transitions and slowing of wages?

Secular Trends in the US from 1980s to 2010s

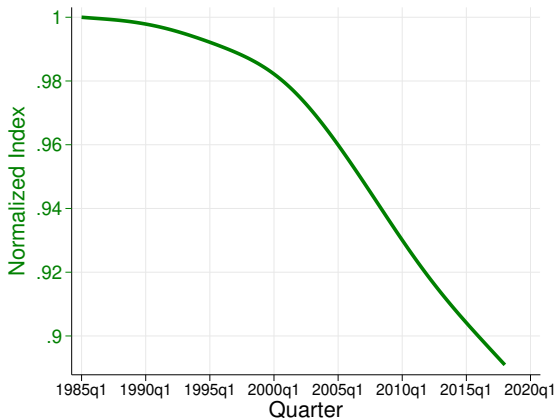
Real Hourly Compensation/Productivity



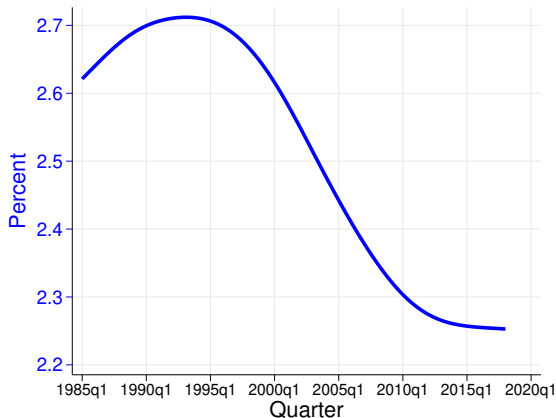
Source: Bureau of Labor Statistics, Current Population Survey (Fujita, Moscarini & Postel-Vinay, 2020; Blanchard and Diamond, 1990). HP filtered trend.

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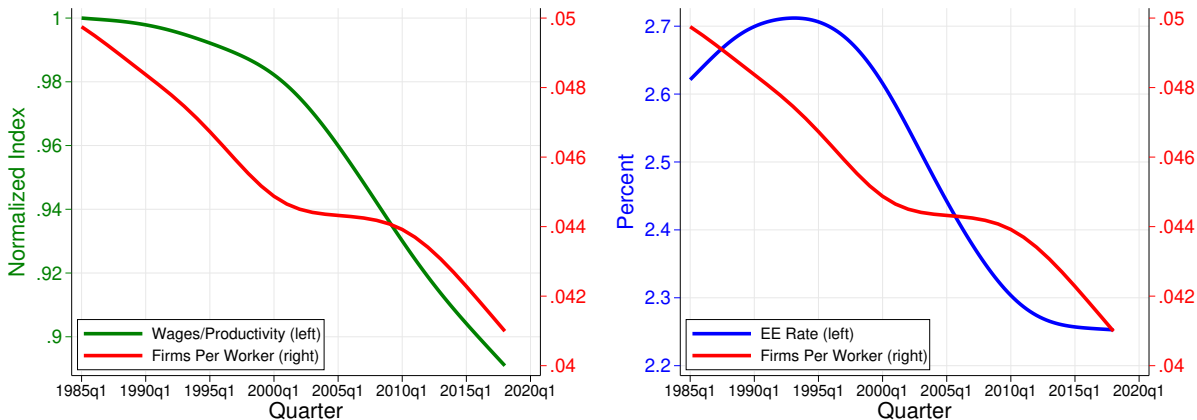
Employer-to-Employer Transitions Rate



Source: Bureau of Labor Statistics, Current Population Survey (Fujita, Moscarini & Postel-Vinay, 2020; Blanchard and Diamond, 1990). HP filtered trend.

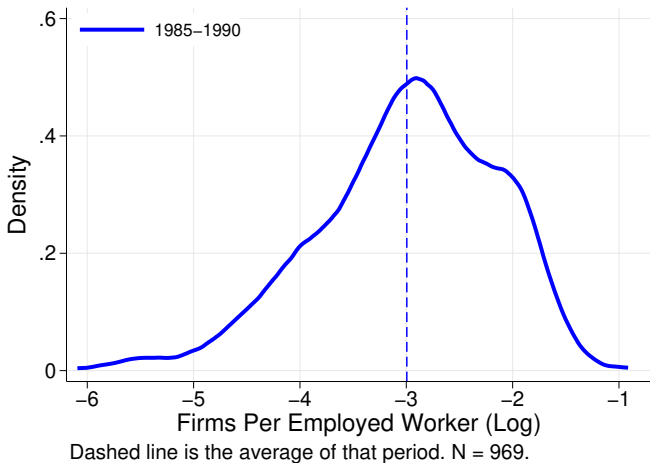
Secular Trends in the US from 1980s to 2010s

Real Compensation/Productivity, EE Rate and Number of Firms Per Employed Worker



Source: Business Dynamics Statistics. HP filtered trend.

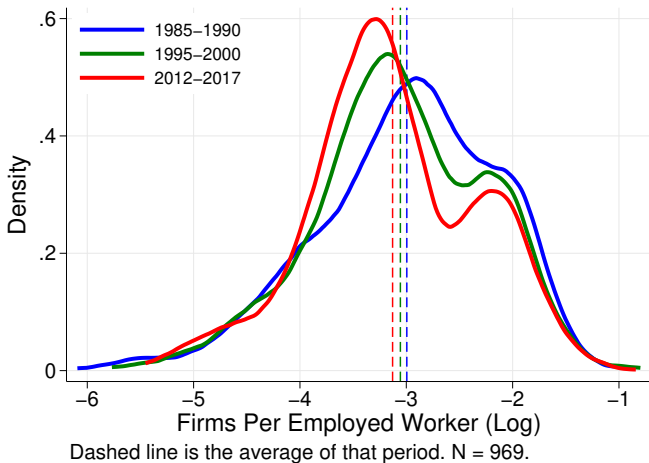
Evolution of No. of Firms per Worker in States \times Sectors



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Evolution of No. of Firms per Worker in States \times Sectors



- 70% of the state-sector cells saw a decline in firms per worker in 2012-17 relative to 1985-90.

Decreasing Competition, EE transitions, and Wages

Hypothesis:

- Lower number of firms compete for a worker \implies
- Smaller set of outside options for employed workers \implies
 1. Lower opportunities to quit to better jobs
 \implies Fewer EE transitions
 2. Lower wage responses by employers to retain workers
 \implies Weak wages relative to productivity

This Paper

- Develop a framework to establish the link between firm competition, EE transitions, and normalized wages
 - EE quits through on-the-job search
 - Wages respond to workers' outside offers and prior employment
 - Channels to decrease firm competition: Finite firms that retaliate against potential employees
- Evaluate the model's implications in cross-sectional data.

Findings

- I. Decreasing the no. of firms per worker in the model from 1980s to 2000s can account for:
 1. 2/3rd of the observed decline in EE transition probability
 2. 1/5th of the observed decline in average real wages/productivity

- II. In line with model predictions, labor markets with lower firms per worker are associated with:
 1. lower frequency of EE transitions
 2. lower payroll share of gross value added

- III. Model affects wage growth of job stayers and switchers differentially, find consistent empirical evidence.

Model Environment

Model Framework

Workers

- Unit continuum of homogeneous, infinitely lived workers with linear preferences.
- Unemployed or employed. Search from both states.

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Firms

- Finite in number and heterogeneous in productivity:
 - N productivity levels: $\theta_i \in \{\theta_1, \dots, \theta_N\}$ s.t. $\theta_1 < \dots < \theta_N$. n_i firms at each level.
- Compete with each other over employed workers (poaching).
- Firms do not match with re-applicants (retaliation à la Jarosch, Nimczik & Sorkin, 2021).

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Match

- Random search. All workers sample from an exogenous job offer distribution and cannot sample offers from their own firm.
- Output = firm productivity. Worker paid wage, firm keeps remaining output. Matching

Wage Determination

Sequential auction framework by Cahuc, Postel-Vinay and Robin (2006):

- Let bargaining share of workers be $\alpha \in [0, 1]$.
- If worker & firm bargain, wage implements a split of match value:
$$\text{Worker's share of match} = (1 - \alpha) \cdot \text{Worker's outside option} + \alpha \cdot \text{Match value}$$
- Wages re-bargained when worker poses a credible threat to quit:
 - If poaching firm more productive than incumbent: Worker quits
 - If poaching firm less productive than incumbent: Workers stays with a wage raise

Main Mechanism

- Firm competition drives worker's option value from on-the-job search.

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(1) Mega-Firm Channel

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(1) Mega-Firm Channel

- Finite firms enable a decrease in the number of potentially poaching employers.
- This reduces worker's value of searching from incumbent firm.

(2) Retaliation Channel

- Worker can no longer match with incumbent firm from their outside option.
- This reduces worker's value of searching from their prior match.

Quantifying the Model

- Calibrate model to a monthly frequency to capture 1985-90 US economy.
- Key Experiment: Changing the number of firms per worker
 1. Evaluate the mega-firm and retaliation channels
 2. Quantify the model's implications for wages relative to productivity and EE rate

Calibration

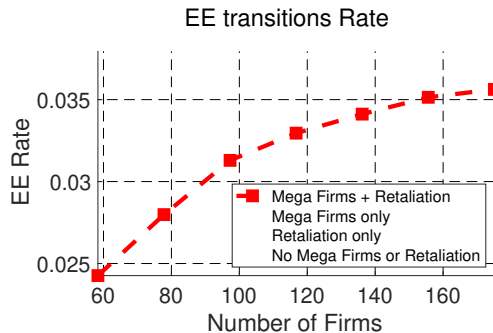
Parameter	Value	Target/Source
Externally Calibrated/ Normalized		
# Productivity Levels	5	Normalization (Bayer & Kuhn, 2018)
# Firms	77.8	Emp-weighted FPW dist, MSA \times Sector
Firm Share over Prod levels	{0.24,0.34,0.24,0.12,0.06}	Firm Share over Wage Distn (BGT)
Internally Calibrated		
Worker's Bargaining Share	0.43	Mean-min Ratio
Contact Rate of Unemp	0.46	E [UE]
Contact Rate of Emp	0.11	E [EE]
Separations Rate	0.038	E [EU]
Job Offer Distn	\sim Beta(1.27,0.75)	w Δ Job Spell, SD(log wage offers)
Output Shifter	1.51	Flow value of Unemp/ALP

Implications of Declining Firms Per Worker on Equilibrium Outcomes

Evaluating the Mega Firm and Retaliation Channels

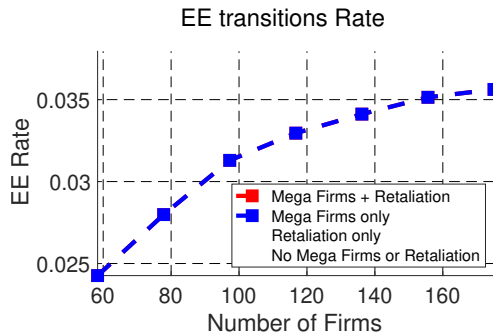
1. **Mega Firm Channel:** Distribution of firms is right skewed leading to disproportionately large firms at the top.
 - **Removing Mega Firm Channel:** Allow firms to be uniformly distributed over the productivity grid.
2. **Retaliation Channel:** Firms do not allow their employees to re-match with them.
 - **Removing the Retaliation Channel:** Allow firms to re-match with their employees.

EE rate increasing in the number of firms



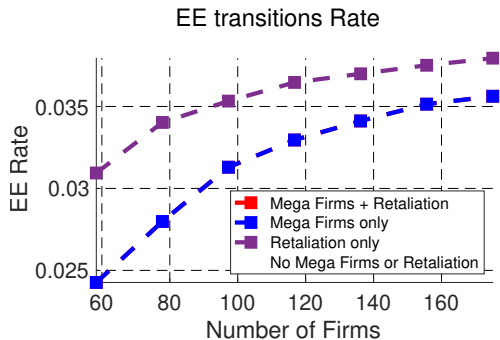
- As the number of firms decreases, EE transitions decline as employees are less likely to receive outside offers.

EE rate increasing in the number of firms



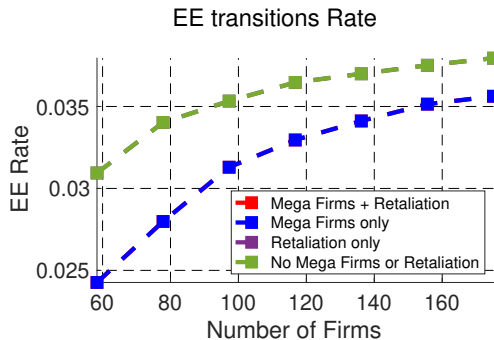
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- Retaliation channel does not affect worker mobility.

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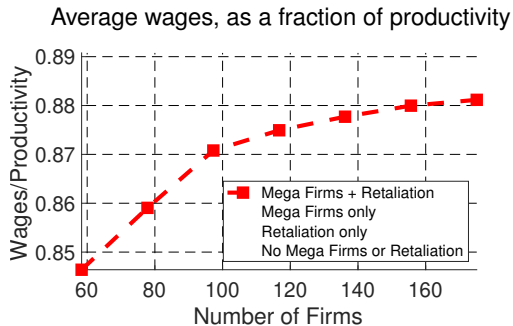
- As the number of firms decreases, EE transitions decline as employees are less likely to receive outside offers.
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- Mega firms and decreasing number of firms per worker are the key drivers of EE transitions.

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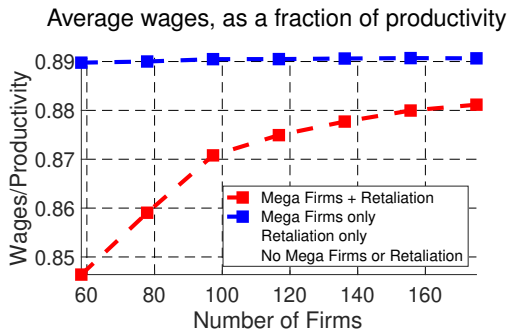
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Wages/Productivity increasing in the number of firms



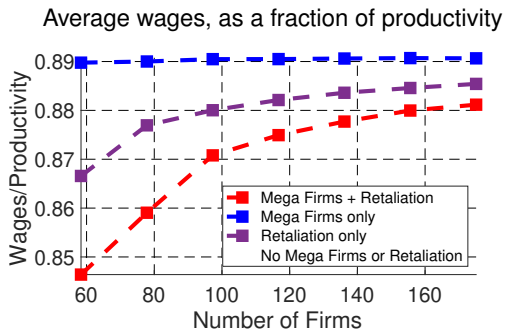
- As the number of firms decreases, average real wages decline due to exclusion of firms from workers' outside options.

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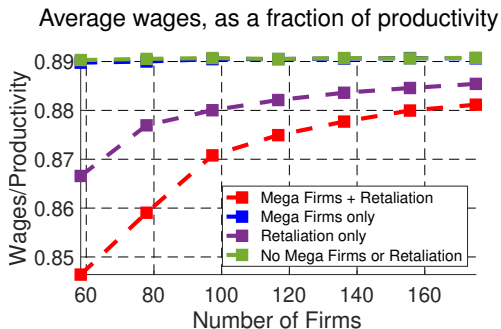
- As the number of firms decreases, average real wages decline due to exclusion of firms from workers' outside options.
- Absent retaliation, mega firms have a relatively smaller affect on wages.

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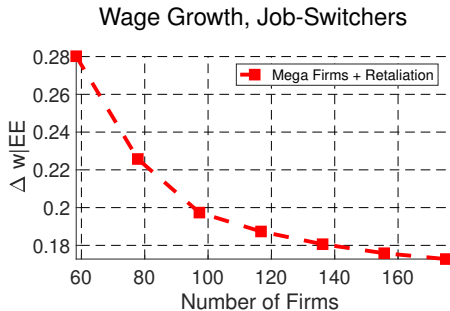
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- Absent retaliation, mega firms have a relatively smaller affect on wages.
- The interaction of mega firms that retaliate against potential employees drives the decline in wages.

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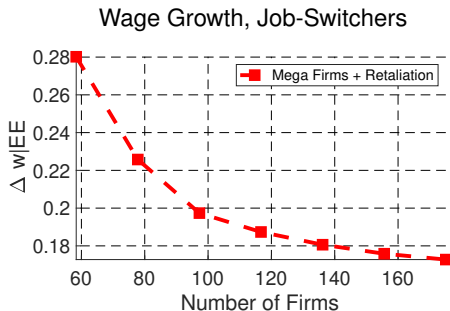
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Implications on wage growth of job stayers and switchers



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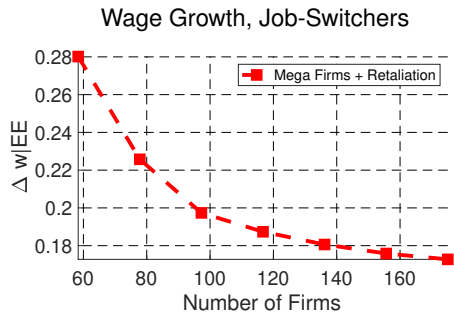
Implications on wage growth of job stayers and switchers



As the number of firms decreases:

- Wage growth of job *stayers* declines as employees less likely to get offers that trigger a raise.

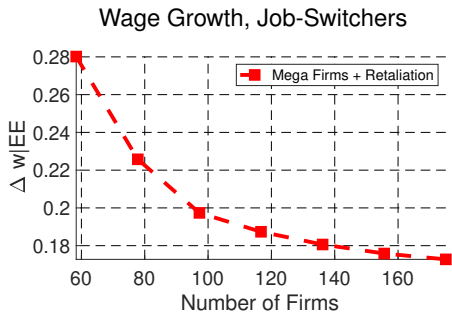
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As the number of firms decreases:

- Wage growth of job *switchers* increases as employees likely to stay on the job at a suppressed wage leading to a large wage gain on switching.

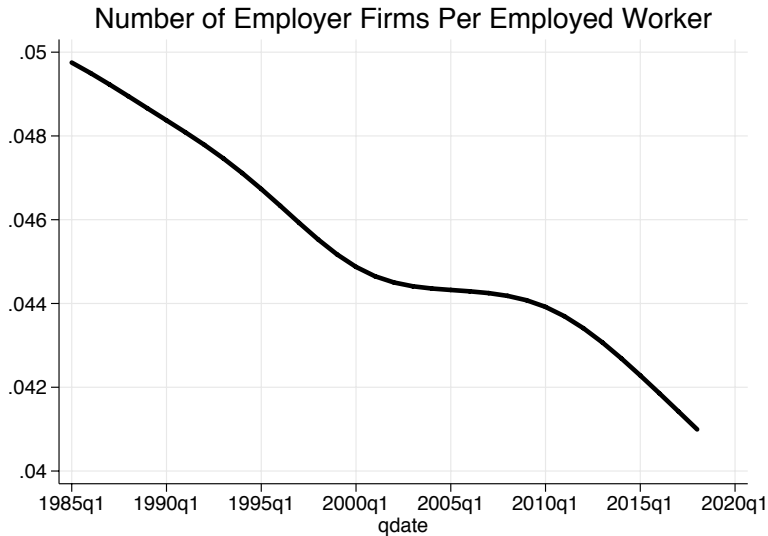
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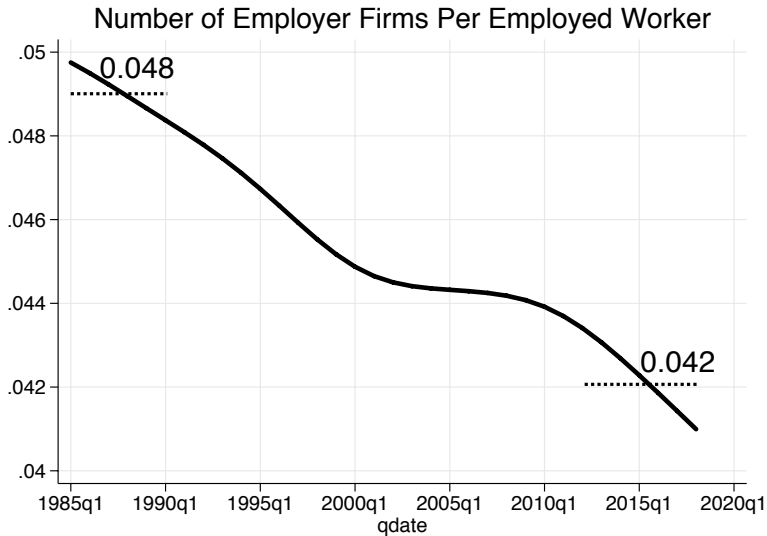
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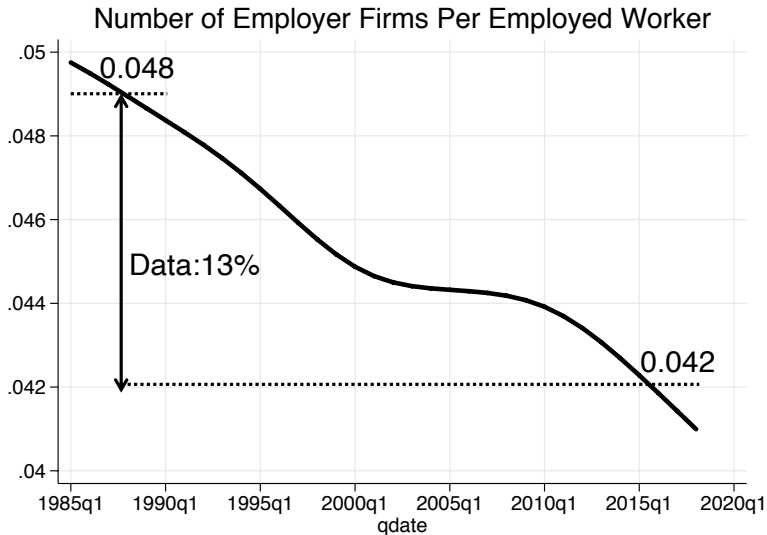
Effect of Declining Firms Per Worker, 1985 to 2017



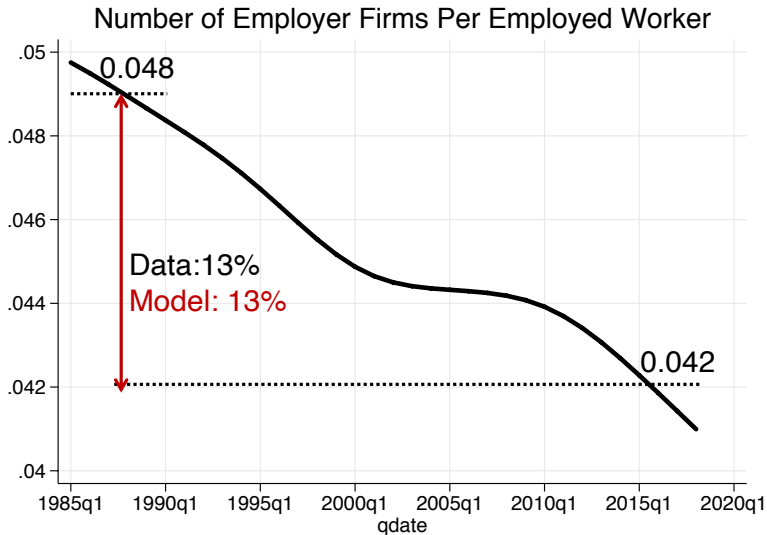
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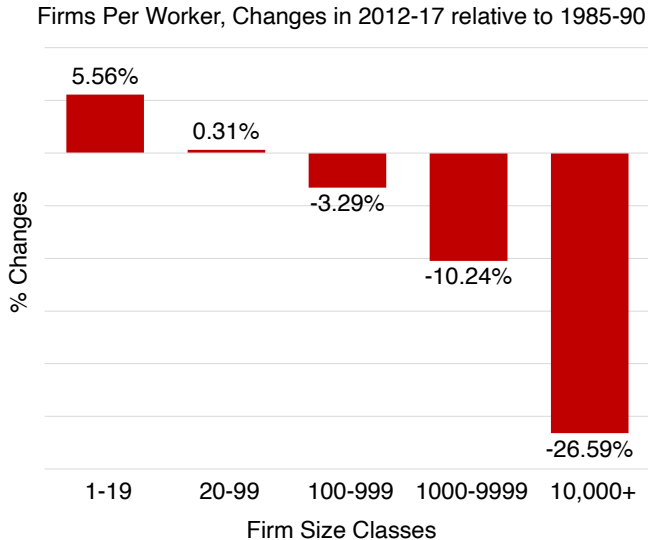
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	<u>EE Transitions Rate</u>	<u>Wages/Productivity</u>
		Data
% Δ from 1985-90 to 2012-17	-18.9	-9.7

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Model

13% Decline in Firms Per Worker

Non-Uniform Decline in Firms Per Worker

Effect of Declining Firms Per Worker, 1985 to 2017

	<u>EE Transitions Rate</u>	<u>Wages/Productivity</u>
		Data
% Δ from 1985-90 to 2012-17	-18.9	-9.7
		Model
13% Decline in Firms Per Worker	-6.5	
Non-Uniform Decline in Firms Per Worker	-14.1	

- Model explains 34-74 percent of the decline in EE transitions rate.

Effect of Declining Firms Per Worker, 1985 to 2017

	<u>EE Transitions Rate</u>	<u>Wages/Productivity</u>
		Data
% Δ from 1985-90 to 2012-17	-18.9	-9.7
		Model
13% Decline in Firms Per Worker	-6.5	-0.8
Non-Uniform Decline in Firms Per Worker	-14.1	-1.7

- Model explains 8-18 percent of the decline in wages relative to productivity.

Summarizing the Testable Predictions Implied by the Model

As number of firms per worker ↓:

1. EE transitions rate: ↓
2. Wages/productivity: ↓
3. Wage growth of job stayers: ↓
4. Wage growth of job switchers: ↑

Evaluating the Model's Predictions in the Cross-Sectional Data

Data

To test model's implications in the data, I utilize:

- Annual MSA-Sector variation in EE transitions from LEHD (2000-18)
- Annual disaggregated industry variation in Payroll Share of Gross Value Added from BLS between 1987-2018.
- Annual State-Sector variation in individual wage growth associated with continuous job spells and job switches from SIPP (1996-2000)

Firms per worker and EE Rate in the cross-section

$$\text{EE Rate}_{jmt} = \beta \cdot \text{FPW}_{jmt} + \text{MSA FE}_m + \text{Sector FE}_j + \text{Year FE}_t + \text{Controls}_{jmt} + \epsilon_{jmt}$$

	Log EE Rate
Log Firms per Worker	0.106*** (0.017)
Observations	69819
R^2	0.96

- Firms per worker and EE transitions rate are positively related.
- Effect is robust to workforce and firm composition controls, different measures of EE transitions and allowing MSA and sectors to vary overtime.

Firms per worker and Payroll Share in the cross-section

$$\text{Wages/Productivity}_{jt} = \beta \cdot \text{Firms Per Worker}_{jt} + \text{Sector FE}_j + \text{Time FE}_t + \epsilon_{jt}$$

	Log Payroll Share of Value Added
Log Firms Per Worker	0.041** (0.018)
Observations	1648
R^2	0.18

- Firms per worker and Wages/Productivity are positively related.
- Effect is robust to adding broader sector-specific trends.

Firms per worker and Earnings Growth of Switchers and Stayers

$$\text{Wage Growth}_{ijst}^{\text{Switcher, Stayer}} = \beta \cdot \text{FPW}_{jst} + \text{State FE}_s + \text{Sector FE}_j + \text{Time FE}_t + \text{Controls}_{ijst} + \epsilon_{ijst}$$

	Earnings Growth, Job Switchers	Earnings Growth, Job Stayers
Log Firms per Worker	-0.029** (0.014)	0.008** (0.004)
Observations	7918	20010
R^2	0.04	0.34

- Firms per worker negatively related to wage growth of job switchers and positively to stayers, supporting the model's implications.
- Effect is robust to demographic controls, and growth rate in hourly wages.

Conclusion

- Examined the role of declining firms per worker in driving the decline in EE transitions and slowing wages.
- Calibrated model implied the decline in firms per worker accounted for 2/3rd of the decline in EE transitions rate and 1/5th of the decline in wages/productivity.
- Provided cross-sectional evidence to support implications of the model related to EE rate, payroll share and wage growth associated with EE transitions and continuous job spells.

Thank You!

Existing Literature & Contribution

- Link between Employer Competition and Declining Labor Share of Income/Wages

- **Theory:** Jarosch, Nimczik & Sorkin (2021), Schubert, Stansbury & Taska (2021), Berger, Herkenhoff, Kostol & Mongey (2022), Berger, Herkenhoff & Mongey (2021), Azkarate-Askasua & Zerecero (2021), Gouin-Bonenfant (2020).

This paper: Model allows EE transitions to respond to firm competition.

- **Data:** Schubert, Stansbury & Taska (2021), Cadwell & Danieli (2021), Hershbein, Macaluso & Yeh (2020), Autor, Dorn, Katz, Patterson & Van Reenen (2020), Benmelech, Bergman & Kim (2020), Rinz (2020), Marinescu, Ouss & Pape (2020), Azar, Marinescu, Steinbaum & Taska (2020), Azar, Marinescu & Steinbaum (2020).

This Paper: Provides an employer competition-based explanation of slowing EE rate and wages.

back

Targeted Moments in the Data and in the Model

Moment	Model	Data	Data Source
E [UE], %	45.6	44.9	CPS, 1985-80
E [EE], %	2.80	2.83	CPS, 1985-80
E [EU], %	3.80	3.79	CPS, 1985-80
E [Wage Growth, 12m Job Spell], %	0.55	0.90	SIPP, 1996-00
Flow value of Unemp/ALP	0.64	0.60	Mas & Pallais (2019)
Mean-min Ratio	1.45	1.5-2	Hornstein, Krusell, & Violante (2011)
SD Log Wage Offers	0.23	0.24	Hall & Mueller (2018)

back

Matching

- Unemployed & employed workers meet job openings with probability λ_0 and λ_1 , resp.
- Random search. All workers sample from exogenous job offer distribution $F(\cdot)$.
 - Probability of sampling an offer from a firm with productivity θ_i is $n_i \cdot f(\theta_i)$.
- On the job search: If worker is at a firm of productivity θ_i , then on-the-job offers can arise from any firm at θ_{-i} , and $n - 1$ firms at θ_i .
 - Assumption in case of a tie: Worker is equally likely to be at incumbent or poaching firm.
- Exogenous separation: worker flows into U, and firm becomes vacant.

back