Labor Market Concentration and its Legal Implications

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Introduction: concentration & antitrust

- Growing concern about increasing product market concentration: increases in markups (De Loecker and Eeckhout, 2017) & decline in the labor share (Autor et al., 2017; Barkai, 2016).
- In theory, antitrust authorities can block mergers based on anticompetitive effects on consumer prices, or input prices (including labor)
- Until recently, enforcement was focused on consumer prices due to belief that labor markets are “robust”: “consumer welfare standard”
- Growing evidence for monopsony just changed FTC enforcement policy: “we’ve told the staff that they’re supposed to look at potential effects on the labor market with every merger they review” (Simons, 10/03/2018).
Main empirical findings

- Herfindahl-Hirschman Index (HHI) defined by a combination of calendar quarter, occupation at the SOC-6 level and commuting zone,

- Azar, Marinescu, Steinbaum, Taska (2018): using near-universe of online vacancies from Burning Glass Technologies, show that 60% of labor markets are highly concentrated, above the 2,500 HHI threshold for high concentration according to the Department of Justice / Federal Trade Commission horizontal merger guidelines.

- When weighing by employment (and using all SOCs), 16% of markets are highly concentrated, reflecting lower concentration in populous commuting zones.


- A 10% higher HHI is associated with 0.4% (OLS) to 1.3% (IV) lower posted wages on CareerBuilder.com.
1 Measuring labor market concentration (Azar, Marinescu, Steinbaum and Taska, 2018)

2 Labor Market Concentration and Wages (Azar, Marinescu, Steinbaum, 2018)

3 Labor market concentration and antitrust law: Marinescu and Hovenkamp (2018), Marinescu and Posner (2019)
Measuring labor market concentration

**Data**

- The share of jobs online as captured by BGT is roughly 85% of the jobs in the Job Openings and Labor Turnover Survey in 2016.
- BGT data similar in industry & occupational composition to overall economy (Hershbein and Kahn, 2016).
- We keep top 200 occupations, representing 90% of vacancies (except when weighing by employment); under-estimates concentration.
- 35.9% of employer names are missing: counted as distinct employers, under-estimates concentration.
The Herfindahl-Hirschman Index (HHI)

- HHI calculated at the quarterly level, because this is the average duration of unemployment in the US.
- FTC/DOJ: an HHI above 1500 is "moderately concentrated", and above 2500 is "highly concentrated".
- A merger that increases the HHI by more than 200 points, leading to a highly concentrated market is "presumed likely to increase market power".

The formula for the HHI in market $m$ and year-quarter $t$ is

$$HHI_{m,t} = \sum_{j=1}^{J} s_{j,m,t}^2$$

(1)

where $s_{j,m}$ is the market share of firm $j$'s vacancies in market $m$. 
The Herfindahl-Hirschman Index: the hypothetical monopsonist test for occupations

- Hypothetical monopolist test used in merger reviews: the relevant antitrust market is the smallest market for which a hypothetical monopolist that controlled the market would find it profitable to implement a “small significant non-transitory increase in price” (SSNIP). In practice, small price increase = 5%.

- Critical Loss Analysis (Harris, 1991): method to determine SSNIP based on a critical price elasticity of demand. If the elasticity is below the critical level, then the market is well defined, otherwise the market is too broad.

- Can apply same method for a hypothetical monopsonist test.
The Herfindahl-Hirschman Index: the hypothetical monopsonist test for occupations

- Most estimates of the elasticity of labor supply to the individual firm are below critical elasticity of 2 (see e.g. Manning, 2011, Dube et al., 2018).
- The firm is already a plausible market.
- Estimated impact of posted wages on applications on CareerBuilder.com is negative within a 6-digit SOC code (Marinescu and Wolthoff, 2018).
- This is because much heterogeneity within a 6-digit SOC: senior accountant jobs pay more and receive fewer applicants than junior accountant jobs.
- The impact of posted wages on applications is only positive within a job title (Marinescu and Wolthoff, 2018).
- SOC-6 is a conservative definition of a market: likely to be too broad, and therefore underestimate HHI.
Figure: HHI by CZ, average over SOC
Table: Summary statistics for labor market concentration: baseline & weighted by BLS employment

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<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>25th Pct.</th>
<th>75th Pct.</th>
<th>Moderately Concentrated</th>
<th>Highly Concentrated</th>
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<td>Moderately</td>
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Baseline market definition:
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<th>Fraction Highly Concentrated</th>
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<td>568</td>
<td>4744</td>
<td>0.12</td>
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Outline

1. Measuring labor market concentration (Azar, Marinescu, Steinbaum and Taska, 2018)

2. Labor Market Concentration and Wages (Azar, Marinescu, Steinbaum, 2018)

Data: overview

- CareerBuilder.com: compared to BGT, better wage info, and info on number of applicants for each vacancy.
- Total number of vacancies on CareerBuilder.com represents 35% of the total number of vacancies in the US in January 2011 as counted in the Job Openings and Labor Turnover Survey.
- Broadly representative of jobs and job seekers in the US (Marinescu and Rathelot, 2018).
- Job seekers can use the site for free, while firms must pay several hundred dollars to post a job opening for one month.
- Occupations were selected based on counts of jobs posted between 2009 and 2012 on CareerBuilder: at the broad SOC level, i.e. SOC-5 digits, the 13 most frequent occupations were selected.
- We also added the three most frequent occupations in manufacturing and construction (17-2110, 47-1010, 51-1010).
- About 20% of the CareerBuilder vacancies post salary information.
Data: selected occupations

The full list of SOC-6 occupations is as follows:

- 11-3011 Administrative services managers
- 13-2011 Accountants and Auditors
- 13-2051 Financial Analysts
- 13-2052 Personal financial advisers
- 13-2053 Insurance Underwriters
- 13-2061 Financial Examiners
- 15-1041 Computer support specialists
- 17-2111 Health and Safety Engineers, Except Mining Safety Engineers and Inspectors
- 17-2112 Industrial engineers
- 29-1111 Registered nurses
- 41-4011 Sales representatives, wholesale & manufacturing, technical & scientific products
- 41-9041 Telemarketers
- 43-3031 Bookkeeping, accounting, and auditing clerks
- 43-4051 Customer service representatives
- 43-6011 Executive secretaries and administrative assistants
- 43-6012 Legal Secretaries
- 43-6013 Medical secretaries
- 43-6014 Secretaries and Administrative Assistants, Except Legal, Medical, and Executive
- 47-1011 First-Line Supervisors of Construction Trades and Extraction Workers
- 49-3041 Farm equipment mechanics
- 49-3042 Mobile Heavy Equipment Mechanics, Except Engines
- 49-3043 Rail Car Repairers
- 51-1011 First-line supervisors/managers of production and operating workers
- 53-3031 Driver/sales workers
- 53-3032 Truck drivers, heavy and tractor-trailer
- 53-3033 Light Truck or Delivery Services Drivers
Figure: Binned scatter of log HHI based on vacancies and log real wage.
Econometric specification: OLS panel regression

Our baseline specification is:

\[ \log(w_{m,t}) = \beta \cdot \text{HHI}_{m,t} + \gamma \cdot X_{m,t} + \alpha_t + \nu_m + \varepsilon_{m,t}, \]  

where \( \log(w) \) is the log real wage in market \( m \) in year-quarter \( t \), \( \text{HHI}_{m,t} \) is the corresponding log HHI, \( X_{m,t} \) is a set of controls, and \( \alpha_t \) and \( \delta_m \) are year-quarter and market (commuting zone-occupation) fixed effects, and \( \varepsilon_{m,t} \) is an error term.

- Key threat to identification: market-specific changes in labor demand or labor supply could influence both posted wages and HHI. A decrease in labor demand can lower wages and the number of firms hiring in the market, leading to higher concentration; a decrease in labor supply can increase wages, and lower the number of firms hiring, also leading to higher concentration.

- We control for labor market tightness, which is a time-varying measure of labor supply & demand at the market level.
IV using the inverse number of employers in other markets

- Instrument the HHI with the average of $\log(1/N)$ in other commuting zones for the same occupation and time period (where $N$ refers to the number of firms in the market).
- Use $\log(1/N)$ instead of $HHI$ as the instrument because it is less likely to be endogenous, as it does not depend on market shares.
- This provides us with variation in market concentration that is driven by national-level changes in the occupation, and not by changes in the occupation in that particular local market.
- Such IV commonly used in industrial organization to address the endogeneity of prices in a local product market, e.g. Nevo (2001). In labor, see Autor, Dorn and Hanson (2013).
- Main threat to identification: labor demand or supply shocks could be correlated across areas. Instrument protects us against a spurious correlation between concentration and outcomes due to market-specific changes, but not against national-level changes that influence both local concentration and other outcomes.
Discussing the instrument

- Example of “good” sources of variation driving 1/N in other markets:
  - Exogenous mergers of companies operating in several markets
- Example of “bad” source of variation driving 1/N in other markets:
  - Productivity shocks in the occupation at the national level (but N.B. OLS results are robust to SOC by quarter fixed effects)
- Instrument may be imperfectly exogenous: Conley, Hansen and Rossi (2010) on plausibly exogenous instruments. For a given departure from exogeneity: the stronger the first stage, the less likely that the IV estimate of the effect of concentration is insignificantly different from zero.
## Market level regressions

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<td>Observations</td>
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<td>R-squared</td>
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<td>Kleibergen-Paap F</td>
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# Vacancy level regressions

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<td>OLS IV</td>
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<td>Log HHI (Vacancies)</td>
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<td>Year-q FE</td>
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<td>Year-q FE × CZ FE</td>
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<td>1,020,510</td>
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<td>R-squared</td>
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<td>150.1</td>
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*** p<0.01, ** p<0.05, * p<0.1
Figure: Effect of Log HHI (Vacancies) on Log Real Wage by Commuting Zone Population Percentile (IV)
Robustness

- If $1/N$ in other markets is a plausibly exogenous instrument for HHI, we can assess robustness to deviations from exogeneity. We estimate the reduced form effect of the instrument on wages, with all controls.
  - As long the direct effect of the instrument on wages is less than 72% of the reduced form estimate, bounds for the effect of HHI on wages do not include zero (Conley, Hansen and Rossi, 2010).
  - Very large departure from exogeneity would be needed to conclude that the effect of HHI on wages is not significantly different from zero.
- Results robust to controlling for fraction of jobs that post wages.
Conclusion on empirical work

- Using the HHI and Burning Glass data, we show that the majority (60%) of US labor markets are highly concentrated.
- A 10% increase in concentration is associated with a 0.38% (OLS) to a 1.3% (IV) decline in posted wages (with CareerBuilder.com data).
Outline

1. Measuring labor market concentration (Azar, Marinescu, Steinbaum and Taska, 2018)

2. Labor Market Concentration and Wages (Azar, Marinescu, Steinbaum, 2018)

The New York Times

*Why Is Pay Lagging? Maybe Too Many Mergers in the Heartland*

Consolidation is often seen as a consumer problem. But it may also reduce competition for workers, especially outside big cities, holding down wages.

*By Noam Scheiber and Ben Casselman*

Jan. 25, 2018

BERLIN, Wis. — For as long as he can remember, the only thing Matt Gies really wanted to do for a living was repair farm equipment.
So far, no merger has been challenged for its anticompetitive effects in the labor market.

We analyze anticompetitive mergers in the labor market and address problems courts will most likely encounter.

We use evidence from Azar et al. (2018a,b) to discuss how a labor market should be defined as an SOC-6 by CZ by quarter, and how the HHI can be calculated with vacancy data.

A merger that increases the labor market HHI by more than 200 points, leading to a highly concentrated market ($HHI \geq 2,500$) is “presumed likely to increase market power”.

Anti-poaching agreements

- Agreements by companies not to poach each other’s workers are unlawful and contribute to increasing labor market concentration by limiting workers’ opportunities.
- Anti-poaching agreement shows that two companies compete for workers in the same market, and that collusion is profitable.
- Anti-poaching agreement is evidence that a merger will likely lead to anti-competitive wage suppression.
Non-competition agreements

- Non-competition agreements limit workers’ opportunities to work for a company’s competitors after they leave their employer.
- Non-competition agreements increase labor market concentration by limiting the number of employers who can effectively compete for workers.
- Non-competition agreements should be added to other factors mentioned in the Merger Guidelines as affecting the significance of a given concentration level.
Economists think antitrust policy should pay more attention to workers

There is mounting evidence that some labour markets are not competitive.
Labor market concentration and antitrust law


Note: Section 1 and 2 counts are based on searches of the Antitrust database in Westlaw. See supra notes 67, 68, 88, 90 for search terms. Section 7 counts (for labor markets, the number is zero) are taken from the DOJ and FTC, see supra note 100.
So far, very little antitrust litigation of abuse of employer power.

Lack of precedent and legal uncertainty reduce the odds that workers, federal agencies or attorney generals will file suit.

We propose new legislation that clarifies how antitrust law applies to employers’ abuse of market power.

Adapt section 2 of the Sherman Act: “It shall be unlawful for any employer engaged in commerce, in the course of such commerce, to monopsonize, attempt to monopsonize, or combine or conspire with any other person or persons to monopsonize, a labor market.”

Define a labor market and labor market power.
Labor market concentration and antitrust law

Marinescu and Posner, 2019: specific proposals

- Horizontal merger review must account for monopsony harms. FTC has indicated a move in this direction, but not DOJ.
- For employers who have substantial monopsony power, the following are antitrust offenses:
  - Non-competition agreements.
  - Restrictions on employees’ freedom to disclose wages and benefits information.
  - Any unfair labor practice as defined under the National Labor Relations Act and amendments.
  - Misclassification of employees as independent contractors.
  - No-poaching agreements, wage-fixing agreements, agreements to share wage and salary information, and related horizontal agreements with other employers.
  - Prohibition on class and other collective actions.
Conclusion

- Using the HHI and Burning Glass data, we show that the majority (60%) of US labor markets are highly concentrated.
- A 10% increase in concentration is associated with a 0.38% (OLS) to a 1.3% (IV) decline in posted wages (with CareerBuilder.com data).
- This type of analysis can be used by federal antitrust agencies like the FTC/DOJ to police anti-competitive behavior in labor markets. Marinescu & Hovenkamp (2018), Posner, Naidu and Weyl (2018), Marinescu & Posner (2019).
- Work in progress: move beyond reduced form & use I/O tools to estimate monopsony power (with Jose Azar & Steve Berry).
### Dependent Variable: Log( Real Wage)

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<th>Cross-Section Fraction Posting Wage</th>
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*** p<0.01, ** p<0.05, * p<0.1
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CZ FE × 6-digit SOC FE ✓ ✓ ✓ ✓
Year-quarter FE × CZ FE ✓ ✓ ✓ ✓
County FE × 6-digit SOC FE ✓ ✓
Year-quarter FE × County FE ✓ ✓
Observations 56,679 58,642 94,714 51,607
R-squared 0.714 0.666 0.722 0.705
Kleibergen-Paap F-stat 2008 1998 1473 907.1

*** p<0.01, ** p<0.05, * p<0.1