

Merger Guidelines for Labor Markets

David Berger

Duke University

Thomas Hasenzagl

University of Minnesota

Kyle Herkenho

University of Minnesota

Simon Mongey

Federal Reserve Bank of Minneapolis

Eric Posner

University of Chicago Law School

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

Introduction

- **Horizontal Merger Guidelines.** Presumption of anticompetitive effects based on *HHI*

$$HHI = 10,000 \sum_i \text{market share}_i^2$$

- 1982 and 2023 (strict): Anticompetitive if *HHI* > 1800 and *DHHI* > 100
- 2010 (loose): Anticompetitive if *HHI* > 2500 and *DHHI* > 200

Introduction

- **Horizontal Merger Guidelines**. Presumption of anticompetitive effects based on *HHI*

$$HHI = 10,000 \sum_i \text{market share}_i^2$$

- 1982 and 2023 (strict): Anticompetitive if *HHI* > 1800 and *DHHI* > 100
- 2010 (loose): Anticompetitive if *HHI* > 2500 and *DHHI* > 200
- Thresholds developed for – and almost exclusively applied to – product markets

Introduction

- **Horizontal Merger Guidelines.** Presumption of anticompetitive effects based on *HHI*

$$HHI = 10,000 \sum_i \text{market share}_i^2$$

- 1982 and 2023 (strict): Anticompetitive if *HHI* > 1800 and *DHHI* > 100
- 2010 (loose): Anticompetitive if *HHI* > 2500 and *DHHI* > 200
- Thresholds developed for – and almost exclusively applied to – product markets
- **Our contribution.** Evaluate *HHI* and *DHHI* thresholds if applied to the labor market

Introduction

- **Approach.** Multi-plant ownership in oligopsony model (Berger, Herkenhoff, Mongey, 2022)
 - Theoretically characterize post-merger labor market outcomes
 - Show that model replicates post-merger outcomes documented by Arnold (2020)
 - Show that model generates sensible predictions in line with evidence in PRH, SS case
- **Results.** If mergers result in “standard” 5% efficiency gain
 - Applying stricter 1982 and 2023 guidelines makes workers better off
 - Applying looser 2010 guidelines harms workers
 - Under 2010 guidelines, many mergers generate monopsony losses not offset by efficiency gain

2023 Guidelines: Labor Section

- (1) *HHI* thresholds may be lower in labor market – we use worker welfare to assess this.

“The level of concentration at which competition concerns arise may be lower in buyer markets than in seller markets, given the unique features of certain buyer markets” (p.25).

- (2) Anticompetitive effects of product markets and labor markets treated in isolation.

“If the merger may substantially lessen competition or tend to create a monopoly in upstream markets, that loss of competition is not offset by purported benefits in a separate downstream product market. ” (p.26).

- We assess worker welfare holding product market competition fixed
- Product market in slides: Perfectly competitive
- Product market in paper: Extend all results to monopolistic competition

Model

Model Environment

Key features

- Many local labor markets across which workers are mobile
- Workers preferences reflect amenity differences across firms (switching cost)
- Strategic firms (internalize effects on market aggregates) with heterogeneous productivity
- If non-strategic, merger has zero labor market effects (can't match Arnold, 2020)
- Nest in general equilibrium to evaluate welfare

Model environment

Markets

- Many local labor markets indexed by $j \in [0, 1]$
- 3-digit NAICS in Commuting Zone (e.g. primary metal mfg. in Minneapolis, [BHKM 2023](#))
- Workers mobile across markets

Firms

- A finite number of firms M_j in market j engage in Cournot competition
- Firm i in market j has heterogeneous productivity z_{ij} , produces $f(z_{ij}, n_{ij})$
- Allow for increasing returns (i.e., scope for labor redundancy post-merger)

Household

- Supplies labor n_{ij} to firm i in market j at wage w_{ij}
- Yields labor supply curve $n_{ij} = g(w_{ij}, w_{-i,j})$ where $g_1(\cdot) > 0$ and $w_{-i,j}$ is other firm wages

More

Mergers

Suppose firm i and i^0 merge, profit maximization of merged firm is:

$$\max_{n_{ij}, n_{i^0j}} f(z_{ij}, n_{ij}) - w_{ij}n_{ij} + f(z_{i^0j}, n_{i^0j}) - w_{i^0j}n_{i^0j}$$

subject to the labor supply curves: $n_{ij} = g(w_{ij}, w_{i^0j}, w_{-i,j})$, $n_{i^0j} = g(w_{i^0j}, w_{ij}, w_{-i,j})$

Diversion. Merged firm internalizes **diversion** tax (e.g. $\frac{\partial w_{ij}}{\partial n_{i^0j}} \neq 0$)

-

Mergers

Suppose firm i and i^0 merge, profit maximization of merged firm is:

$$\max_{n_{ij}, n_{i^0j}} f(z_{ij}, n_{ij}) + f(z_{i^0j}, n_{i^0j})$$

subject to the labor supply curves: $n_{ij} = g(w_{ij}, w_{i^0j}, w_{-ij})$, $n_{i^0j} = g(w_{i^0j}, w_{ij}, w_{-i^0j})$

Diversion. Merged firm internalizes **diversion** tax (e.g. $\frac{\partial w_{ij}}{\partial n_{i^0j}} \neq 0$)

- Hiring more at one plant makes labor more expensive at other plant

Proposition - Cournot, Firm heterogeneity, DRS

- (i) Combined share of merging firms falls, (ii) Shares of all other firms increase,
- (iii) Wages at all firms fall, (iv) Employment index of merging firms falls,
- (iv) At least one merging firm shrinks.

Mergers

Suppose firm i and i^0 merge, profit maximization of merged firm is:

$$\max_{n_{ij}, n_{i^0j}} f(z_{ij}, n_{ij}) + w_{ij}n_{ij} + f(z_{i^0j}, n_{i^0j}) + w_{i^0j}n_{i^0j}$$

subject to the labor supply curves: $n_{ij} = g(w_{ij}, w_{i^0j}, w_{i,j})$, $n_{i^0j} = g(w_{i^0j}, w_{ij}, w_{i,j})$

Diversion. Merged firm internalizes **diversion** tax (e.g. $\frac{\partial w_{ij}}{\partial n_{i^0j}} \neq 0$)

- Hiring more at one plant makes labor more expensive at other plant

Corollary - Required Efficiency Gains

Efficiency z_{ij}, z_{i^0j} must increase for average wages to increase at

(i) market, (ii) merging firms.

! Work toward a Required Efficiency Gain view of guidelines.

Merger guidelines

Assessment of merger guidelines y

Assessment of merger guidelines

- Simulate mergers under same criteria as our [Arnold \(2020\)](#) replication, and
 - i. Assume a **5 percent** efficiency gain to z_{1j} , z_{2j}
 - ii. Pass the merger in each market if satisfies some 'guideline' assessed at the market level
In progress: Measuring properties of cross-market covariance structure of merging firms' establishments
- Compute welfare gain / loss in each market, and average across markets
- Result: Workers harmed by 2010 guidelines, better off with 2023 guidelines

Assessment of merger guidelines - Viewed through efficiency gains

- Let D be the percent increase in both firms' z_{ij} such that

Assessment of merger guidelines - Viewed through efficiency gains

- Let D be the percent increase in both firms' z_{ij} such that $\mathbf{W}_j^0 = \mathbf{W}_j$
- In the paper we refer to this as the *Required Efficiency Gain* of a merger

	A. 2023 draft guidelines	B. 2010 guidelines
Prevent mergers above threshold (<i>HHI</i> & <i>DHHI</i>)	(1800 & 100) (1)	(2500 & 200) (2)
Average efficiency gain for worker surplus neutrality - Increasing returns - $a = 1.05$		
Permitted mergers	1.8%	2.8%
Blocked mergers	18.6%	21.5%

From assessment to optimal

1. Which establishments within / across markets are involved in a merger?

- Using Census data to understand the variance-covariance structure of
- a. Overlap of firms in each market? - E.g. Not one firm in Baltimore, other in Boston
- b. Correlation of firm-market employment in markets where both present

2. What are the costs of merger review?

- Requesting budget line items from DOJ

Penguin Random House Merger

Penguin Random House and Simon & Schuster Merger

- PRH and SS were first and third largest among '*Big Five*' commercial publishers.

Penguin Random House and Simon & Schuster Merger

- PRH and SS were first and third largest among '*Big Five*' commercial publishers.
 - PRH market share of 37%, SS market share of 12%.

Penguin Random House and Simon & Schuster Merger

- PRH and SS were first and third largest among *'Big Five'* commercial publishers.
 - PRH market share of 37%, SS market share of 12%.
- Merger proposed in 2020, DOJ then sues to block the merger on grounds of

"harm to American workers, in this case authors, through consolidation among buyers ... referred to as 'monopsony'."

Penguin Random House and Simon & Schuster Merger

- PRH and SS were first and third largest among *'Big Five'* commercial publishers.
 - PRH market share of 37%, SS market share of 12%.
- Merger proposed in 2020, DOJ then sues to block the merger on grounds of *"harm to American workers, in this case authors, through consolidation among buyers ... referred to as 'monopsony'."*
- In November 2022 PRH and SS scrapped the proposed merger.

Penguin Random House and Simon & Schuster Merger

- PRH and SS were first and third largest among 'Big Five' commercial publishers.

- PRH market share of 37%, SS market share of 12%.

- Merger proposed in 2020, DOJ then sues to block the merger on grounds of

"harm to American workers, in this case authors, through consolidation among buyers ... referred to as 'monopsony'."

- In November 2022 PRH and SS scrapped the proposed merger.

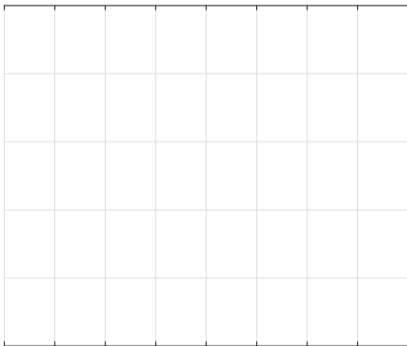
Replicate. Map contract shares (MOJ) to emp shares and simulate PRH & SS merger.

- Choose $fz_{1j}, \dots, z_{5j}g$ to get contract shares of $f0.37, 0.25, 0.12, 0.11, 0.07g$

- Eight other firms with one percent market share each

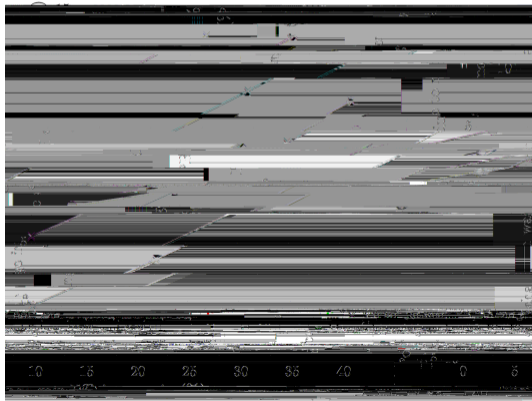
Penguin Random House Merger

- Workers unharmed if industry wage (W_j) is at least pre-merger levels
- REG of 17% for workers to be unharmed.



Penguin Random House Merger

- Workers unharmed if industry wage (W_j) is at least pre-merger levels
- REG of 17% for workers to be unharmed.
- Validation - Government witness estimate 3.7-7.4 percent wage loss at PRH



Penguin Random House Merger

- Workers unharmed if industry wage (W_j) is at least pre-merger levels
- REG of 17% for workers to be unharmed.
- Validation - Government witness estimate 6.4-19.2 percent wage loss at SS



Conclusion

Conclusion

Contributions:

- Provide first analysis of merger guidelines in labor market
- **Workers unharmed** under 5% efficiency gain and **1982/2023 guidelines**
- **Workers harmed** under 5% efficiency gain and **2010 guidelines**

See paper for:

- Downwards wage pressure formulas – both measurement and implementation via REG's
- Distribution of gains / losses across different ***HHI***, ***DHHI***, ***GDWPI***

Appendix

Downward wage pressure

- Rearranging the first order conditions for the firm:

$$w_{1j} = \frac{\#_{1j}}{\#_{1j} + 1} z_{1j} \frac{n_{2j} \frac{\#_{1j} w_{2j}}{\#_{1j}}}{\#_{1j} z_{1j}} \quad (1)$$

:= Downward wage pressure

- We formally define downward wage pressure to be the term $n_{2j} \frac{\#_{1j} w_{2j}}{\#_{1j}}$