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The Other Side of a Merger: Labor Market Power, Wage Suppression, and Finding Recourse in Antitrust Law

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The enforcement of antitrust law is chiefly motivated by the duty to protect consumer welfare—a charge that is understood practically to mean ensuring that the prices of consumer products remain competitive after a merger.

The regulatory focus is on evaluating the effects of a potential decrease in selling side competition. In terms of buying side competition,¹ labor market concentration can worsen after the merger of firms that compete for the same pool of workers, regardless of whether they compete in the same product market.² However, regulators never consider (as a factor in antitrust analysis) the impacts on wages from heightened labor market power.

Yet despite this history of price-focused antitrust enforcement, we can now hear the early rumblings of a largely unstudied idea growing into an urgent policy concern.³ This idea is that some mergers may be unlawful because they injure competition in the labor market by enabling a post-merger firm to suppress wages or salaries anticompetitively. Such anticompetitive wage suppression goes hand in hand with the suppression of employment and output below the competitive level. The economic ripple effects can be staggering, and we are only just beginning to understand them.

No court has ever condemned a merger because of its anticompetitive effects in labor markets. This may be because it has not been clear how widespread labor market power truly is, and how much it affects wages.

SUMMARY

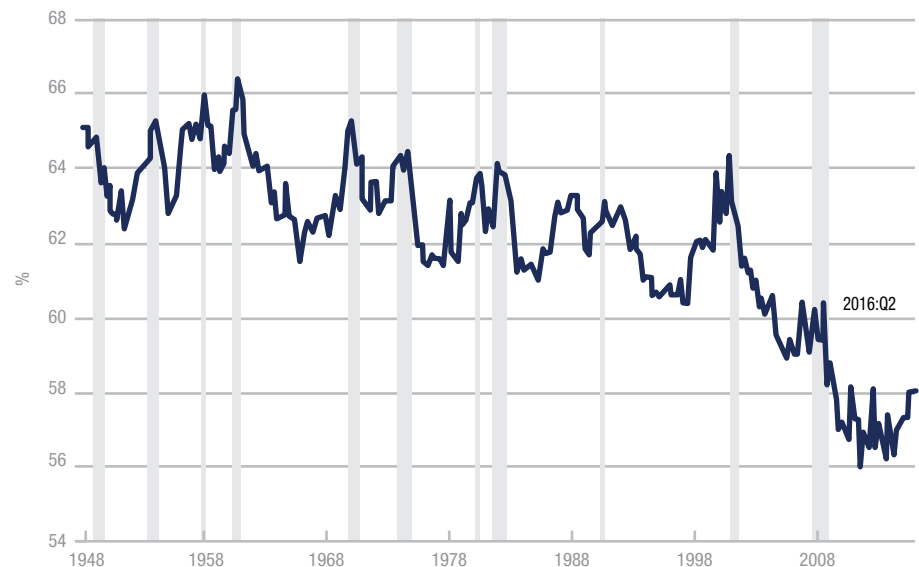
- Labor market concentration can worsen after a merger takes place, and this heightened concentration can negatively affect wages. The focus of antitrust analysis, however, has been on the prices of consumer products, not the wages of laborers.
- New research indicates that, on average, labor markets are highly concentrated, and that higher concentration is associated with significantly lower posted wages for new jobs. On average, a 10% increase in concentration yields is associated with a 0.3% to 1.3% decrease in wages. This should have implications for how regulators think about mergers.
- As with conventional merger analysis, antitrust regulators could screen for mergers that threaten to increase concentration in the labor market, and could use calculations of labor market concentration to determine when any given merger would likely lead to anticompetitive wage suppression.
- It is not a significant stretch of antitrust principles to think of consumer welfare as entitling people to a competitive market in which to sell their labor, just as it entitles them to a competitive market in which to purchase products and services. Most consumers are also workers, and so when it comes to protecting consumers, anticompetitive wage effects should be given the same attention as anticompetitive price effects.

It also may be the result of uncertainty about the mechanisms available to courts for litigating antitrust cases grounded in concern over concentrated labor market power. This Issue Brief will highlight the findings of several new research papers, which collectively provide compelling (albeit early stage) answers to each of these critical uncertainties.⁴

In a nutshell, the research indicates that labor market concentration in the average market (defined below) is high, and higher concentration is associated with significantly lower posted wages for new jobs. Given high concentration, some mergers have the potential to significantly increase labor market power. Increasing labor market concentration has likely contributed to one widely observed phenomenon – specifically, that the share of labor participation in American Gross Domestic Product (GDP) has fallen substantially (see Figure 1).⁵ Indeed, the markets in which firms purchase labor are often significantly more concentrated than the markets in which they sell their products.

With this knowledge in hand, antitrust regulators can use the U.S. government’s existing Horizontal Merger Guidelines⁶ to make a prima

FIGURE 1 LABOR SHARE OF INCOME, NONFARM BUSINESS SECTOR 1948-2016



Note: Shading denotes recession.
Source: Bureau of Labor Statistics, Productivity and Costs

facie case against a horizontal merger of firms that, if allowed, could lead to anticompetitive wage suppression. Under the consumer welfare principle, antitrust law is properly directed at output reducing practices no matter what their source, and there is certainly no principled reason for excluding anticompetitive effects in labor markets.

A LOCAL PROBLEM, EVERYWHERE: WAGES FALL WHEN LABOR MARKET CONCENTRATION RISES

The term “monopsony” commonly refers to situations where a few companies dominate hiring in the labor market.⁷ Compared to a perfectly competitive labor market, monopsony leads to lower employment and lower wages. All else remaining equal, lower employment also entails lower production on the output (product) side.

NOTES

¹ *E.g.*, a post-merger firm may have increased market power over its suppliers or workers. Buy-side merger challenges are uncommon, and historically they have focused on anti-competitive power over suppliers.
² To be clear, the term labor market concentration refers to the concentration that exists among the firms who hire and employ labor, not to the concentration among the laborers themselves. For example, two technology companies in a given labor market can compete over the same computer engineers and scientists, even if they sell vastly different products.

³ Council of Economic Advisers, “Labor Market Monopsony: Trends, Consequences, and Policy Responses,” Issue Brief, White House, Washington DC, 2016. (CEA)
⁴ This Issue Brief is based primarily on the following two papers: Jose Azar, Ioana Marinescu, and Marshall Steinbaum, “Labor Market Concentration,” Working Paper, 2017; and Ioana Marinescu and Herbert Hovenkamp, “Anticompetitive Mergers in Labor Markets,” Working Paper, 2018. I also briefly draw on Jose Azar, Ioana Marinescu, Marshall Steinbaum, and Bledi Taska, “Concentration in US Labor Markets: Evidence from Online Vacancy Data,”

Working Paper, 2018.
⁵ See, *e.g.*, David Autor, et al., “Concentrating on the Fall of the Labor Share,” *American Economic Review* 107 (2017): CEA, *supra* note 2. The data given here indicate that the labor share of nonfarm income fell from 65% in 1948 to 58% in 2016.
⁶ See U.S. Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines (2010), available at <https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf>.
⁷ The term “monopsony” is used today in labor economics

Ultimately, imperfect competition in the labor market has the same kind of depressing effect on production as we see in cases of imperfect competition in the product market. For the purpose of a merger review in labor markets, the most important question is whether a merger is likely to increase monopsony in a labor market, thus reducing wages and output.

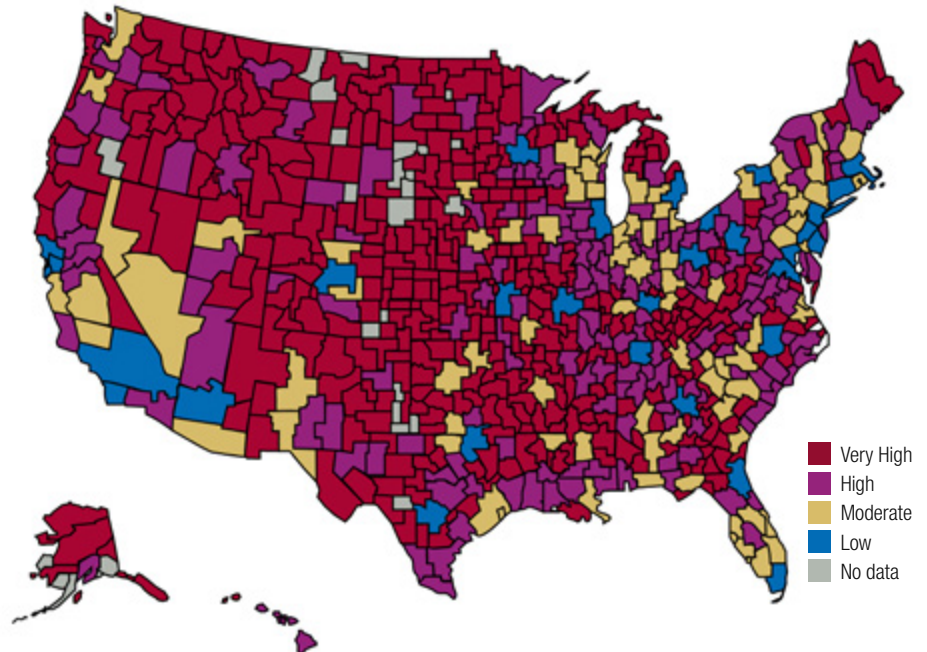
Answering that question requires no new tools or methods. We can measure labor market concentration using the Herfindahl-Hirschman Index (HHI), which is what regulators already use for product markets.⁸ HHI is equal to the sum of the squares of the market shares of each firm in the market. In this case, market shares are based on the share of job vacancies of all the firms that post vacancies in that market. HHI has become conventional in industry concentration measures and has been used in the government’s Horizontal Merger Guidelines for some thirty-five years.⁹ The same HHI thresholds apply to both seller and buyer power. For example, an HHI above 1,500 is “moderately concentrated,” an HHI above 2,500 is “highly concentrated,” and a merger that increases the HHI by more than 200 points, leading to a highly concentrated market, is

“presumed likely to increase market power.”

To calculate market shares in geographic and occupational labor markets, we use data from CareerBuilder.com, the largest online job board in the United States, matching millions of workers and firms. The total number of vacancies on CareerBuilder.com represented 35% of the

total number of vacancies in the U.S. in January 2011 as counted in the Job Openings and Labor Turnover Survey.¹⁰ The occupations we cover include the most frequent occupations among CareerBuilder.com vacancies, plus the top occupations in manufacturing and construction. We calculate each firm’s vacancy shares—in order to determine the HHIs of market

FIGURE 2 AVERAGE HHI BY COMMUTING ZONE, BASED ON VACANCY SHARES



This figure shows the average of the Herfindahl-Hirschman Index by 6-digit SOC occupation code for the labor markets over the period of 2010Q1-2013Q4. The categories we use for the HHI concentration levels are: Low: HHI between 0 and 1500; Moderate: HHI between 1500 and 2500; High: HHI between 2500 and 5000; Very High: HHI between 5000 and 10000. These categories correspond to the DOJ/FTC guidelines, except that we add the additional distinction between high and very high concentration levels around the 5,000 HHI threshold. Market shares are defined as the sum of vacancies posted in CareerBuilder.com by a given firm in a given market and year-quarter divided by total vacancies posted in the website in that market and year-quarter.

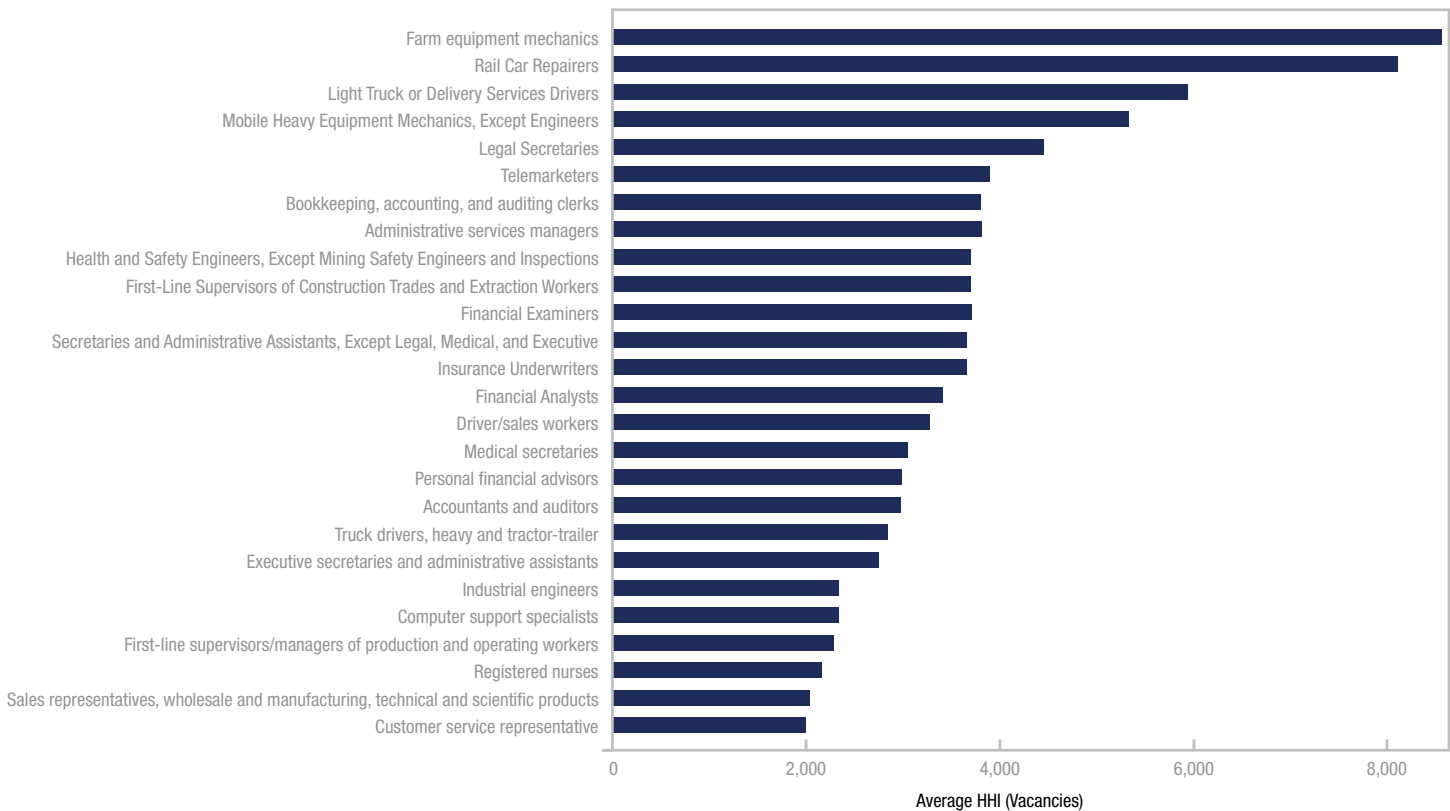
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to refer to both a monopsony proper (i.e., where just one buyer dominates the market) and to general demand-side lack of competition, or an oligopsony (i.e., where the number of purchasers of labor is small, but greater than one).
⁸ On use of the HHI in merger assessment, see Phillip E. Areeda and Herbert Hovenkamp, *Antitrust Law* ¶¶940-932 (4th ed., 2014).
⁹ The first version of the Merger Guidelines to employ the HHI was issued in 1982. All versions are maintained by the federal antitrust enforcement agencies in an archival website. See [merger-guidelines.
¹⁰ Our results, while fairly general, do not necessarily apply to the whole US labor market. CareerBuilder.com does not contain all vacancies in the occupations that are in our sample. This could lead us to overestimate labor market concentration.
¹¹ An SOC-6 level occupation is a reference to a list of “Standard Occupational Classifications” maintained by the Bureau of Labor Statistics. Occupations are assigned a six-digit code, and the sixth digit is the highest level of classification. See United States Department of Labor,](https://www.justice.gov/archives/atr/1982-</p></div>
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Occupational Employment Statistics (2016), available at https://www.bls.gov/oes/current/oes_stru.htm.
¹² The commuting zones in question were developed by the U.S. Department of Agriculture and are based on data from the 2000 Census.
¹³ See U.S. Dept. of Agriculture, *Commuting Zones and Labor Market Areas* (2012), available at <https://www.ers.usda.gov/data-products/commuting-zones-and-labor-market-areas/>.
¹⁴ Ioana Marinescu and Roland Rathelot, “Mismatch Unemployment and the Geography of Job Search,” *American*



FIGURE 3 AVERAGE HHI BY OCCUPATION, BASED ON VACANCY SHARES, FOR THE LARGEST 30 OCCUPATIONS



concentration—for over 8,000 labor markets, defined by a combination of occupation at the SOC-6 level¹¹ and commuting zone.¹²

We show that, on average, labor markets are highly concentrated: the average HHI is 3,157, which is above the Horizontal Merger Guidelines’ “highly concentrated” threshold of 2,500. Concentration varies by

occupation and city, with larger cities being less concentrated. Figure 2 shows a map of all the commuting zones in the United States color-coded by the average HHI, based on vacancy shares. Figure 3 shows the average HHI by occupation, based on vacancy shares. With an average HHI of around 2,000, the occupation that is least concentrated is “Customer

service representative.” The most concentrated occupation is “Farm equipment mechanic,” with an average HHI well above 8,000. CareerBuilder, while being one of the largest online job boards, does not contain all online vacancies. Using a dataset from Burning Glass Technologies that covers essentially all online vacancies, we find similar results. Across essentially all

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- Economic Journal: Macroeconomics*, forthcoming.
- ¹⁵ Ioana Marinescu and Ronald Wolthoff, “Opening the Black Box of the Matching Function: The Power of Words,” National Bureau of Economic Research Working Paper #22508, 2016, available at <https://doi.org/10.3386/w22508>.
- ¹⁶ See U.S. Bureau of Labor Statistics, “Unemployed Persons by Duration of Unemployment,” available at <https://www.bls.gov/news.release/empst.t12.htm> (last updated Feb. 2, 2018).
- ¹⁷ Alan B. Krueger and Eric A. Posner, “A Proposal for Protecting Low-Income Workers from Monopsony and Collusion,” 2018 (On file with author).
- ¹⁸ *California v. eBay, Inc.*, 2014 WL 4273888 (N.D.Cal. Aug. 29, 2014).
- ¹⁹ See DOJ, 2007. “United States v. Arizona Hospital and Healthcare Association.” Complaint. See also DOJ, 2010. “United States v. Adobe Systems, Inc. et al.” Complaint.



occupations and commuting zones, the average market has an HHI of 3,953, or the equivalent of 2.5 recruiting employers. In all, 54% of labor markets are highly concentrated (above 2,500 HHI) according to the DOJ/FTC guidelines. Using the HHI, we can determine the relationship between concentration and the wages that companies advertise in their job postings on CareerBuilder.com. It shows that average posted wages are strongly and negatively correlated with labor market concentration as measured by HHI. However, this correlation alone cannot be counted as strong evidence that higher concentration depresses wages in a causal sense, as wages in depressed labor markets also tend to be lower.

Instead of simply comparing different labor markets, we look at how changes in concentration within a given market over time affect wages. The data indicate that when labor market concentration increases, posted wages decrease. Furthermore, to account for economic conditions in each specific market, we must control for the number of job postings divided by the number of job applications, also called “labor market tightness” in economic jargon. But even after controlling for tightness, the impact of labor market concentration on wages remains negative and statistically significant. All of these tests show that the negative effect of concentration on wages is likely to be causal and not driven by unaccountable market conditions.

The size of the impact of labor market concentration on posted wages depends on the specific statistical model used, but on average, a 10%

increase in concentration is associated with a 0.3% to 1.3% decrease in wages. Furthermore, smaller cities are doubly disadvantaged by having higher levels of labor market concentration and by suffering more from any increase in concentration.

The takeaway for antitrust regulators is that it is straightforward, according to the evidence, to calculate labor market concentration with vacancy data.

ANTITRUST LAW CAN LEVEL THE PLAYING FIELD: DEFINING “LABOR MARKETS”

How, then, can regulators use this ability to assess labor market power when evaluating mergers to determine whether any given merger would lead to anticompetitive wage suppression? The first obstacle in their path is the challenge of determining a robust definition of a labor market. Based on our research, we suggest this provisional definition: commuting zone by 6-digit Standard Occupational Classification (SOC) by quarter. This would be, for example, accountants and auditors in the Philadelphia commuting zone in the first quarter of 2011. The justifications for each element of this definition are as follows:

Geography: Markets for many non-perishable manufactured products are nationwide or even worldwide, while service markets tend to be a bit smaller. Measuring geographic markets for labor, however, can be more complex. We recommend using the observed Commuting Zones (CZs) developed by the USDA, as noted above. The CZs are based on data from

the 2000 Census on commuting patterns across counties to capture local economies and local labor markets in a way that is more economically meaningful than county boundaries.¹³ On CareerBuilder.com, 81% of job applications occur where the job applicant and prospective employer are within the same commuting zone.¹⁴

Occupation: The 6-digit SOC codes can assist in defining markets by occupational category. Surprisingly, within a 6-digit SOC occupation, job postings with higher wages attract significantly fewer applicants than jobs with lower wages.¹⁵ This negative relationship between wages and the number of applicants prevails on average across all 6-digit SOC codes and is driven by the fact that workers within a 6-digit SOC code can be very different from each other. For example, among accountants and auditors, which is a 6-digit SOC code, job postings with the title “senior accountant” pay higher wages and attract fewer applicants than job postings with the title “junior accountant.” This shows that, in general, a 6-digit SOC is likely too broad a definition of the labor market. However, because it may underestimate effective labor market concentration, a 6-digit SOC is still a good presumptive definition of a labor market.

Time: The selection of the time period is particularly important for the labor market because job seekers can only afford to be unemployed and looking for a job for a limited period of time. The median duration of unemployment is about 10 weeks.¹⁶ That is, unemployed job seekers typically are hired or drop out of the market within about one quarter. This



is why it is presumptively sensible to calculate labor market concentration over a quarter.

Regulators can thus compute the HHI for the labor market based on vacancy shares in the commuting zone, 6-digit SOC, and quarter, using data from Burning Glass Technologies (<http://burningglass.com/>), EMSI (<http://www.economicmodeling.com/>) or Indeed (<https://www.indeed.com/>). Regulators can then use the thresholds from the Horizontal Merger Guidelines to make a prima facie case against a merger that significantly increases labor market concentration and runs the risk of anticompetitively suppressing wages or salaries.

WHAT CONSTITUTES A “HORIZONTAL” LABOR MARKET MERGER?

The next obstacle involves deciding which mergers are truly “horizontal.” Under conventional merger analysis, a merger is horizontal if the merging firms are competitors in some relevant product and geographic market. The same principle applies to mergers that threaten to increase concentration in the labor market. Such a merger is horizontal if the two firms compete for hiring in the same labor market, whether or not they compete for hiring in the product market. A prima facie case against a merger that significantly increases labor market concentration can be made based on HHI, independently of whether the merger would also increase concentration in the product market.

One useful way to think of the extent of horizontal competition in the market for employees is to look

at the participants in the relatively large number of “anti-poaching” cases. Non-poaching agreements are simply collusion by another name. They occur when employers agree with each other not to hire one another’s workers.¹⁷ The fact that two companies have entered into a non-poaching agreement is alone sufficient to suggest that the employees subject to that agreement constitute a relevant market and that a merger between the firms would be anticompetitive.

To illustrate the difference between collusive groups that involve products and those that involve labor, consider eBay, Inc., and Intuit, Inc.¹⁸ A federal district court approved an antitrust settlement in a state’s federal antitrust challenge to a labor “non-poaching” agreement between these firms. Intuit’s principal products are TurboTax, a popular income tax preparation program, and Quickbooks, a popular business program for bookkeeping and accounting. By contrast, eBay is a popular online auction site, which is not in the business of producing and selling software. Looking at the product side, a merger between eBay and Intuit would very likely be quickly approved. The firms appear not to be substantial competitors in any market in which they sell products or services. Nevertheless, the two firms found it profitable to agree with one another not to poach each other’s “specialized computer engineers and scientists.”

The fact that the two firms found it profitable to enter into this agreement is a strong indicator that (1) the firms were competitors in this particular portion of the labor market and (2) that between the two of

them they had enough market power to make the agreement profitable. As a result, a merger between eBay and Intuit should invite very close scrutiny in this particular section of the labor market, as should similar cases.¹⁹

A NEW UNDERSTANDING OF “CONSUMER WELFARE”

The final obstacle for consideration here concerns the future aim of the Horizontal Merger Guidelines. While challenges to mergers affecting the labor market require some rethinking of merger policy, they need not alter any of its fundamentals.

One way to address the case where monopsony does not affect product prices is to define the “consumer welfare” principle in such a way as to include both monopoly and monopsony. To do this, we need to think about consumer welfare in terms of output rather than price. Further, people appear in markets as both product consumers and as sellers of their labor. As a result, it is not a significant stretch to think of consumer welfare as entitling them to a competitive market in which to sell their labor, just as it entitles them to a competitive market in which to purchase products and services.

Most consumers are also workers, and so anticompetitive wage effects should be given the same attention as anticompetitive price effects. Going forward, those reviewing mergers cannot simply assume that lack of anti-competitive effects in the product market entails the same for the labor market.



CONCLUSION

In this Issue Brief, we presented evidence for monopsony in the US labor market, showing that labor market concentration is high, and increasing concentration is associated with lower wages. We discussed the market definition for

the labor market and argued that HHIs based on US vacancy data can be used to make a prima facie case against a horizontal merger, while relying purely on the existing Horizontal Merger Guidelines. We described what constitutes a “horizontal” merger in the discussion about the widespread use of

non-poaching agreements. Finally, we noted that merger policy does not need to change fundamentally in order to review mergers that threaten to increase labor market concentration and allow for anti-competitive wage suppression.



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