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Anticompetitive Mergers in Labor Markets

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ANTICOMPETITIVE MERGERS IN LABOR MARKETS

IOANA MARINESCU & HERBERT HOVENKAMP*

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INTRODUCTION

Mergers of competitors are conventionally challenged under the federal antitrust laws when they threaten to lessen competition in some product or service market in which the merging firms sell. In many of these cases the threat is that in concentrated markets—those with only a few sellers—the merger increases the likelihood of collusion or collusion-like behavior. The result will be that the post-merger firm will reduce the volume of sales in the affected market and prices will rise.

Mergers can also injure competition in markets in which the firms purchase, however.¹ Although that principle is widely recognized, very few litigated cases have applied the merger law to buyers.² The fear is that firms who collectively have power in the market in which they buy will be able to suppress the price that they pay. Such exercises of “monopsony” power are mirror images of the monopoly power exercised in selling markets.³ The post-merger firm reduces the number of purchases and forces the market price down.⁴

This article concerns an even more rarefied subset, and one that has received little attention in merger law. Nevertheless, its implications are staggering. Some mergers

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1. See, e.g., C. Scott Hemphill & Nancy L. Rose, *Mergers that Harm Sellers*, 127 *YALE L.J.* 2078 (2018).

2. See *infra* text accompanying note 16.

3. On the economics of firms with market power in the markets in which they buy, see ROGER D. BLAIR & JEFFREY L. HARRISON, *MONOPSONY IN LAW AND ECONOMICS* (rev. ed. 2010).

4. See *id.* at 45–48.

may be unlawful because they injure competition in the labor market by enabling the post-merger firm anticompetitively to suppress wages or salaries. To the best of our knowledge no court has ever condemned a merger because of its anticompetitive effects in labor markets.

Concentration in labor markets is very likely as high or higher than in many of the product markets in which firms sell.⁵ As a result, the antitrust law against anticompetitive mergers affecting employment markets is certainly underenforced, very likely by a significant amount. This is critical for several reasons. First, the share of the gross domestic product (GDP) going to labor has been declining at an alarming rate.⁶ This may result from several things, including suppression of unions and increasing concentration in product markets, but lax antitrust enforcement could be an important source as well. Second, antitrust law does not condemn unilateral price setting by dominant firms. Rather it requires an anticompetitive exclusionary practice.⁷ As a result, a dominant firm that unilaterally sets a very high price for its sales or a very low price for its purchases, including purchases of labor, does not violate the antitrust laws. In that case, a second-best solution to the problem of suppressed wages is merger law, which can interdict wage-suppressing mergers before they occur.⁸ Third, under the consumer welfare principle antitrust law is properly directed at output reducing practices no matter what their source,⁹ and there is certainly no principled reason for excluding anti-competitive effects in labor markets.

Here, we offer a first but reasonably comprehensive and empirically based assessment of the problem of mergers that facilitate anticompetitive wage and salary suppression. We analyze the empirics and consider the most likely problems that courts will encounter in such litigation, including market definition, assessment of market concentration, the role of non-compete and non-poaching agreements as aggravating factors for concentration, and application of the government's Merger Guidelines.¹⁰ Although many of the queries that this analysis requires might seem unique, the principles being applied are derived entirely from well-established

5. See *infra* text accompanying notes 30–35.

6. See, e.g., David Autor, David Dorn, Lawrence F. Katz, Christina Patterson & John Van Reenen, *The Fall of the Labor Share and the Rise of Superstar Firms* 1 (Nat'l Bureau of Econ. Research, Working Paper No. 23396, 2017), <https://www.nber.org/papers/w23396.pdf> [<https://perma.cc/Y3FK-F25H>]; see also David Autor, David Dorn, Lawrence F. Katz, Christina Patterson & John Van Reenen, *Concentrating on the Fall of the Labor Share*, 107 AM. ECON. REV. (PAPERS & PROC.) 180 (2017); COUNCIL OF ECONOMIC ADVISERS, LABOR MARKET MONOPSONY: TRENDS, CONSEQUENCES, AND POLICY RESPONSES 2 (2016), https://obamawhitehouse.archives.gov/sites/default/files/page/files/20161025_monopsony_labor_mrkt_cea.pdf [<https://perma.cc/J5SV-KFHP>]. The data given here indicate that the labor share of nonfarm income fell from 65% in 1948 to 58% in 2016. COUNCIL OF ECONOMIC ADVISERS, *supra*.

7. See 3A PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 720 (4th ed. 2015).

8. See Herbert Hovenkamp, *Prophylactic Merger Policy*, 70 HASTINGS L.J. 45 (2018).

9. See Herbert Hovenkamp, *Is Antitrust's Consumer Welfare Principle Imperiled?* (Aug. 28, 2018) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3197329 [<http://perma.cc/UF5A-67Y8>].

10. See *infra* text accompanying notes 104–42.

economic doctrine and traditional antitrust rules concerning competitive harm. We comprehensively apply these well-established principles to purchasing rather than selling, and to labor rather than products.

I. SECTION 7 OF THE CLAYTON ACT AND LABOR MARKET COMPETITION

The goal of antitrust policy toward mergers is to protect consumers from noncompetitive price increases or reductions in output, which can be measured by quantity, but also by reductions in quality or innovation.¹¹ Under antitrust's merger provision, section 7 of the Clayton Act, the court must identify some "line of commerce" and "section of the country"¹² in which a contemplated merger threatens lower output and higher prices. This approach is reflected in the enforcement Agencies' Horizontal Merger Guidelines.¹³

The most commonly recognized competitive harm from mergers is higher prices charged by sellers. This does not tell the entire story, however. Mergers can also lead to anticompetitive output reductions resulting from diminished competition on the buying side of the market.¹⁴ The antitrust laws pertaining to mergers do not distinguish between seller side and buyer side competitive harm. Section 7 of the Clayton Act simply requires that the merger involve an "activity affecting commerce" that may "substantially . . . lessen competition" or tend to "create a monopoly."¹⁵ Coverage that includes both sellers and buyers is not universal in the Clayton Act. For example, section 3 of the Act, which reaches anticompetitive tying and exclusive dealing, applies only to sales, not to purchases.¹⁶ This is also true of most of the provisions of the Robinson-Patman Act, which outlaws certain discriminations in price between "different purchasers," thus indicating that this provision applies only to sellers.¹⁷ By contrast, the Clayton Act merger law was drafted so as to apply to anticompetitive mergers by both sellers and buyers.

While the use of section 7 to pursue mergers among buyers is well established, there is relatively little case law.¹⁸ This paper is concerned with one particular aspect

11. See 11 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 1901d (4th ed. 2018).

12. 15 U.S.C. § 18 (2012).

13. U.S. DEP'T OF JUSTICE & FEDERAL TRADE COMM'N, HORIZONTAL MERGER GUIDELINES (2010) [hereinafter 2010 HORIZONTAL MERGER GUIDELINES], <https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf> [<https://perma.cc/KY3N-2APJ>].

14. See 4A PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶¶ 980–82 (4th ed. 2016).

15. 15 U.S.C. § 18 (2012).

16. 15 U.S.C. § 14 (2012) (making it unlawful "to lease or make a sale or contract for sale" on the condition or understanding that the "lessee or purchaser" not deal in a competitor's goods where the effect may be substantially to lessen competition); see also 11 AREEDA & HOVENKAMP, *supra* note 11, ¶¶ 1801, 1803 (output contracts).

17. 15 U.S.C. § 13(a) (2012) (making it unlawful for a firm "to discriminate in price between different purchasers"). However, the Robinson-Patman Act does have a separate provision applying to buyers that makes it unlawful for them "knowingly to induce or receive" a discriminatory sale prohibited by the statute. 15 U.S.C. § 13(f).

18. See *United States v. Cargill*, No. Civ.A. 991875GK, 2000 WL 1475752 (D.D.C. June

of mergers that involve buyers, which is anticompetitive mergers threatening to suppress employee wages or salaries to infracompetitive levels. Anticompetitive wage suppression typically goes hand in hand with suppression of employment and output below the competitive level.

Mergers affecting the labor market require some rethinking of merger policy, although not any altering of its fundamentals. For example, mergers that threaten wage suppression are horizontal when the merging firms compete in the labor market, and this may be true whether or not they are competitors in any product market.¹⁹ As we show below, 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 that involve agreements among firms not to hire one another’s employees.²⁰ This is quite consistent with the general principle of market definition in merger cases that a market consists of a grouping of firms that, if unified by a cartel, would have market power,²¹ or more specifically, an ideal collusive group.²² So if two firms agree with one another not to exchange employees they must be competitors in that portion of the labor market covered by the agreement. That would make a merger among those two firms horizontal, although not necessarily unlawful. Naked collusion is condemned without regard to market structure. By contrast, mergers that might threaten coordinated interaction are unlawful only if certain structural conditions are met. One of the things we do in this paper is identify those conditions, considering whether they should differ when we are addressing a buying market rather than a selling market and—more particularly—when that buying market involves labor.

30, 2000) (consent decree) (grain purchasers); *United States v. Aetna*, No. 3-99 CV 1398-H, 1999 WL 1419046 (N.D. Tex. Dec. 7, 1999) (health care operations); *United States v. Pennzoil Co.*, 252 F. Supp. 962 (W.D. Pa. 1965) (granting preliminary injunction). On the case law generally, see 4A AREEDA & HOVENKAMP, *supra* note 14 (mergers among buyers).

The flip side of the oligopsony issue is that powerful buyers can serve to discipline the higher sales prices of the post-merger firm. See Herbert Hovenkamp, *Mergers and Buyers*, 77 VA. L. REV. 1369 (1991); see also Cory Capps, *Buyer Power in Health Plan Mergers*, 6 J. COMP. L. & ECON. 375 (2010); Peter C. Carstensen, *Buyer Power and the Horizontal Merger Guidelines: Minor Progress on an Important Issue*, 14 U. PA. J. BUS. L. 775 (2012).

19. See *infra* text accompanying notes 119–23.

20. See *infra* text accompanying notes 129–32.

21. See 2B PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶ 530 (4th ed. 2014); Herbert Hovenkamp, *Response: Markets in IP and Antitrust*, 100 GEO. L.J. 2133 (2012).

22. See Kenneth D. Boyer, *Industry Boundaries*, in *ECONOMIC ANALYSIS AND ANTITRUST LAW* 70, 73–74 (Terry Calvani & John Siegfried, eds., 2d ed. 1988) (relevant market is “ideal collusive group”); Gregory J. Werden, *The Use and Misuse of Shipments Data in Defining Geographic Markets*, 26 ANTITRUST BULL. 719, 721 (1981) (“A market for antitrust purposes is any product or group of products and any geographic area in which collective action by all firms (as through collusion or merger) would result in a profit maximizing price that significantly exceeded the competitive price.”); Gregory J. Werden, *The History of Antitrust Market Delineation*, 76 MARQ. L. REV. 123 (1992) (on development of concept of relevant antitrust market as collusive group).

To illustrate the difference between collusive groups that involve products and those that involve labor, consider eBay, Inc., and Intuit, Inc.²³ A federal district court approved an antitrust settlement in a state's federal antitrust challenge to a labor "non-poaching" agreement between these firms.²⁴ 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."²⁵

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. For example, if two out of ten equivalent firms agreed to divide a market the agreement would be unprofitable because the remaining eight would be free to compete as they pleased. They would steal workers from any cartel member who sought to decrease its wage. Successful collusion requires that the colluding firms in the aggregate have a sufficient share of the market so that their own agreement cannot quickly be offset by the actions of their competitors.²⁶ As a result, a merger between eBay and Intuit should invite very close scrutiny in this particular section of the labor market. This section of the market would also qualify as a "line of commerce" under section 7 of the Clayton Act, and a challenger need identify only one such section in which anticompetitive results would be substantially likely to occur.²⁷ If they were the only firms in this particular labor market, this would be a merger to monopoly, which is almost always unlawful.

This paper examines a number of issues that are relevant to merger challenges in employment markets, focusing on the traditional rationale for challenging horizontal mergers—namely, that increased market concentration in labor markets will threaten to facilitate coordinated interaction²⁸ among employers that could lead to lower

23. *California v. eBay, Inc.*, No. 12-05874, 2014 WL 4273888 (N.D. Cal. Aug. 29, 2014). The decision is discussed in more detail *infra* text accompanying notes 122–24.

24. *eBay*, 2014 WL 4273888.

25. On the identity of the employees subject to the nonpoaching agreement, see Third Amended Complaint for Violations of the Sherman Act, Cartwright Act, and Unfair Competition Law for Injunctive Relief and Civil Penalties at *9, *California v. eBay, Inc.*, No. 12-CV-05874-PSG, 2014 WL 9912567 (N.D. Cal. May 5, 2014).

26. See Peter Z. Grossman, *Why One Cartel Fails and Another Endures: The Joint Executive Committee and the Railroad Express*, in *HOW CARTELS ENDURE AND HOW THEY FAIL: STUDIES OF INDUSTRIAL COLLUSION* 111, 117–29 (Peter Z. Grossman ed., 2004); Margaret C. Levenstein & Valerie Y. Suslow, *Breaking up is Hard to Do: Determinants of Cartel Duration*, 54 J. L. & ECON. 455 (2011); Margaret C. Levenstein & Valerie Y. Suslow, *What Determines Cartel Success?*, 44 J. ECON. LIT. 43 (2006).

27. See Hovenkamp, *supra* note 8, at 48; *infra* text accompanying notes 92–93.

28. The term "coordinated interaction" is commonly used in merger policy to speak of mergers that threaten either express price fixing or else some kind of oligopoly or other follow-the-leader pricing. See 2010 HORIZONTAL MERGER GUIDELINES, *supra* note 13, § 7 at 24 ("A

output, as well as wage suppression, in employment markets. Because most mergers are challenged prior to their occurrence, the threat is not of observed coordinated interaction, but rather of an “appreciable danger” that it may occur if the merger is permitted to proceed.²⁹

We also outline the major issues that enforcement agencies, both federal and state, are likely to encounter in assessing mergers threatening competitive harm in labor markets. Much of this analysis would also apply to private plaintiff challenges. While employees generally lack standing to use the antitrust laws to challenge antitrust violations in *product* markets, they clearly have standing when the harm occurs in the labor market in which they are employed.³⁰ An employee who can provide satisfactory proof that he or she was injured by lower wages that resulted from a merger of the employer would have standing to obtain either damages or an injunction.³¹

Recent economic literature has shown that labor market concentration is a widespread phenomenon, with the majority of U.S. labor markets exhibiting high concentration.³² Increasing labor market concentration has likely contributed to one widely observed phenomenon—namely, that the share of labor in American Gross Domestic Product (GDP) has fallen substantially.³³ Indeed, the markets in which firms purchase labor are often significantly more concentrated than the markets in which they sell their products.³⁴

Just to be clear here, the term labor market concentration refers to the concentration that exists among the firms who hire and employ labor, not to the

merger may diminish competition by enabling or encouraging post-merger coordinated interaction among firms in the relevant market.”). As such, the term can speak about a variety of behaviors. *See* *United States v. H & R Block, Inc.*, 833 F. Supp. 2d 36, 77 (D.D.C. 2011) (“As the Merger Guidelines explain, coordinated interaction involves a range of conduct, including unspoken understandings about *how* firms will compete or refrain from competing.”).

29. *See, e.g.*, *Hosp. Corp. of Am. v. FTC*, 807 F.2d 1381, 1389 (7th Cir. 1986) (Posner, J.) (“Section 7 does not require proof that a merger or other acquisition has caused higher prices in the affected market. All that is necessary is that the merger create an appreciable danger of [collusive practices] in the future.”); *FTC v. Staples, Inc.*, 190 F. Supp. 3d 100, 114–15 (D.D.C. 2016) (quoting *FTC v. Arch Coal, Inc.*, 329 F. Supp. 2d 109, 116 (D.D.C. 2004)) (“Proof of actual anticompetitive effects is not required; instead, the FTC must show an appreciable danger future coordinated interaction based on predictive judgment.”).

30. *See* 2A PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶ 352 (4th ed. 2014) (discussing employee antitrust standing to sue for violations that occur in labor markets).

31. *Id.*

32. José Azar, Ioana Marinescu, Marshall Steinbaum & Bledi Taska, *Concentration in US Labor Markets: Evidence From Online Vacancy Data* (Nat’l Bureau of Econ. Research, Working Paper No. 24395, 2018), [hereinafter Azar et al., *Online Vacancy Data*] <http://www.nber.org/papers/w24395> [<https://perma.cc/W2YY-C5NQ>].

33. *See, e.g.*, sources cited *supra* note 6.

34. José Azar, Ioana Marinescu & Marshall Steinbaum, *Labor Market Concentration 7–8* (Nat’l Bureau of Econ. Research, Working Paper No. 24147, 2017), [hereinafter Azar et al., *Labor Market Concentration*] <http://www.nber.org/papers/w24147> [<https://perma.cc/RV7X-2ZYL>].

concentration among the laborers themselves. For example, if an area has two coal mines that employ coal miners, we would speak of that labor market as highly concentrated, even though there might be 1000 miners who are employed or seeking employment in those two mines. That would be an example of a highly concentrated labor market on the employer side, even though the market of the employees themselves is diffuse. In that case, very likely all the bargaining power would be on the side of the mines. Many product markets have similar characteristics. For example, while the automobile production market has relatively few sellers its customers number in the millions.

We measure the correlation between wages and labor market concentration by the Herfindahl-Hirschman Index (HHI),³⁵ just as we do for product markets. That correlation is at least as strong as is the correlation between product prices and HHIs.³⁶ As a result, the approach taken to concentration levels in the 2010 Merger Guidelines, linking the level of scrutiny to the concentration level, should work equally well in labor markets.

Mergers can also be condemned under a “unilateral effects” theory in differentiated product markets. The theory is that a merger between firms who are reasonably adjacent in product space in a differentiated market might permit the two firms to increase their own price without coordinating prices with the remaining firms in the market.³⁷ In such cases, the price of the output of the post-merger firm increases, while that of more remote rivals in the same market does not. Because labor markets are also differentiated there is no reason in principle that the same theory could not apply to mergers suppressing labor market competition. But that problem has not been fully theorized in any literature of which we are aware and we reserve it for another time.³⁸ This paper is concerned with labor market mergers that present an appreciable risk of collusion or collusion-like behavior by the employers in a labor market.

II. MERGER POLICY AND MONOPSONY

When few firms dominate selling in a product market, we call it an oligopoly, or supply-side lack of competition.³⁹ When few firms dominate buying in a market, we call it an oligopsony, or demand-side lack of competition.⁴⁰ In an extreme case, when just one buyer dominates the market, we have a monopsony, a term coined by economist Joan Robinson in *The Economics of Imperfect Competition* in 1933.⁴¹ The

35. On the HHI and its use, see *infra* text accompanying notes 46–50.

36. On the latter correlation, see Herbert Hovenkamp & Carl Shapiro, *Horizontal Mergers, Market Structure, and Burdens of Proof*, 127 YALE L.J. 1996 (2018).

37. See *id.*

38. For an outline of some of the theory, see Suresh Naidu, Eric A. Posner & Glen Weyl, *Antitrust Remedies for Labor Market Power*, 132 HARV. L. REV. 536 (2018).

39. 2B AREEDA & HOVENKAMP, *supra* note 21, ¶ 404.

40. See C. Scott Hemphill & Nancy L. Rose, *Mergers that Harm Sellers*, 127 YALE L.J. 2078 (2018).

41. JOAN ROBINSON, *THE ECONOMICS OF IMPERFECT COMPETITION* (1933); see also Robert J. Thornton, *How Joan Robinson and B.L. Hallward Named Monopsony*, 18 J. ECON. PERSP. 257 (2004).

classic case of a labor market monopsony is the company town, where a single company, such as a mine, dominates employment. This monopsony situation is especially likely to arise in specialized jobs, e.g. miners, for which there is literally only one company hiring in town. The term “monopsony” is used today in labor economics to refer to both a monopsony proper and to an oligopsony, where the number of purchasers of labor is small, but greater than one.⁴² In the remainder of this paper, the term “monopsony” refers to situations where a few companies dominate hiring in the labor market.

Just as a monopoly depresses production, a labor monopsony depresses employment below the level that would obtain in a perfectly competitive market.⁴³ By employing fewer workers, the monopsonist makes a higher profit because it can pay workers less than their productivity, capturing the surplus for itself. In a perfectly competitive labor market each worker would receive the marginal value of his or her labor.⁴⁴ But the firm with market power in the market where it purchases labor will suppress its purchases, driving the wage down. Compared to a perfectly competitive labor market, monopsony leads to lower employment and lower wages. *Ceteris paribus*, lower employment also entails lower production on the output (product) side. Ultimately, imperfect competition in the labor market has the same kind of depressing effect on production as imperfect competition in the product market.

Until recently, imperfect competition in the labor market has not received much attention in antitrust enforcement. One possible reason is the belief that there are many jobs out there, so a merger is unlikely to lead to a monopsony and to substantially affect workers’ opportunities in the labor market. Another possibility is that people assume that workers are highly mobile and can readily relocate from places with fewer to those with greater opportunities. However, a growing body of empirical evidence indicates that labor market monopsony is a real issue. A number of studies have focused on specific U.S. labor markets.⁴⁵ A 2018 paper by Azar, Marinescu, Steinbaum, and Taska shows that monopsony is likely to be an issue in the majority of U.S. labor markets.⁴⁶ That paper defines a labor market as a six-digit

42. See William M. Boal and Michael R. Ransom, *Monopsony in the Labor Market*, 35 J. ECON. LIT. 86 (1997).

43. Just as the monopolist seeks to maximize profits by equating marginal cost and marginal revenue, the monopsonist tries to equate marginal outlay with marginal revenue. See HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE § 1.2b & n.25 (5th ed. 2015).

44. By contrast, if the *workers* had market power, they would receive more than the marginal value of their labor. For example, if a town had four hospitals requiring anesthesiologists but only two local anesthesiologists, the hospitals would bid up their salaries to supacompetitive levels, assuming that the local area was a geographic market; that is, that bringing in anesthesiologists from outside at current prices was not feasible.

45. Jordan D. Matsudaira, *Monopsony in the Low-Wage Labor Market? Evidence from Minimum Nurse Staffing Regulations*, 96 REV. ECON. STAT. 92 (2013); Michael R. Ransom & David P. Sims, *Estimating the Firm’s Labor Supply Curve in a ‘New Monopsony’ Framework: Schoolteachers in Missouri*, 28 J. LABOR ECON. 331 (2010); Douglas O. Staiger, Joanne Spetz, & Ciaran S. Phibbs, *Is There Monopsony in the Labor Market? Evidence from a Natural Experiment*, 28 J. LABOR ECON. 211 (2010).

46. Azar et al., *Online Vacancy Data*, *supra* note 32.

SOC (“Standard Occupational Classification”)⁴⁷ by commuting zone (e.g. accountants and auditors in the Philadelphia commuting zone).⁴⁸ Data on job postings from the essentially all vacancies posted online in 2016 show that the HHI is above 2500 in 54% of U.S. labor markets. Another 11% of markets are moderately concentrated, i.e. have an HHI between 1500 and 2500. Furthermore, Azar, Marinescu and Steinbaum⁴⁹ show that an increase in HHI is associated with lower wages advertised by companies in their job postings.⁵⁰ By definition, a horizontal merger increases concentration because it reduces by one (in the case of a two-firm merger) the number of firms in the market.

The HHI is equal to the sum of the squares of the market shares of each firm in the market.⁵¹ That index has become conventional in industry concentration measures and has been used in the government’s Merger Guidelines for some thirty-five years.⁵² Under the 2010 Merger Guidelines in use today, if a market had five equal size firms each would have a 20% market share and the market’s HHI would be $20^2 + 20^2 + 20^2 + 20^2 + 20^2$, or 2000. If two of these firms should merge there would now be one firm with a 40% market and three with 20% shares. The HHI would read $40^2 + 20^2 + 20^2 + 20^2$, or 2800. The 2010 Horizontal Merger Guidelines define markets with post-merger HHIs exceeding 2500 as “highly concentrated,” and state that mergers in such markets that also increase the HHI level by more than 100 points “raise significant competitive concerns and often warrant scrutiny.”⁵³ Further mergers in such markets that increase the HHI by more than 200 points “will be presumed to be likely to enhance market power” unless rebutted by persuasive evidence.⁵⁴ This hypothetical merger would fall within that category.

Below, we present the economic theory and evidence for monopsony in the U.S. labor market. We discuss market definition for the labor market and argue that HHIs based on U.S. vacancy data⁵⁵ can be used to make a prima facie case against a horizontal merger based on the existing Horizontal Merger Guidelines. We then discuss several related issues, including the relevance of widespread use of noncompete agreements⁵⁶ and how the efficiency defense may be mobilized by companies to combat the government’s prima facie case against a merger.⁵⁷

47. See *infra* text accompanying notes 85–87.

48. On the relevance of a commuting zone, see *infra* text accompanying notes 83–85.

49. Azar et al., *Labor Market Concentration*, *supra* note 34.

50. See *infra* text accompanying notes 90–92.

51. On use of the HHI in merger assessment, see 4 PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶¶ 930–32 (4th ed. 2014); HOVENKAMP, *supra* note 43, § 12.4.

52. 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 *1982 Merger Guidelines*, U.S. DEP’T OF JUST. ARCHIVES, <https://www.justice.gov/archives/atr/1982-merger-guidelines> [<https://perma.cc/BM7S-94KN>].

53. 2010 HORIZONTAL MERGER GUIDELINES, *supra* note 13, § 5.3.

54. *Id.*

55. These data can be obtained from aggregators. See, e.g., BURNINGGLASS TECHNOLOGIES, <http://burning-glass.com> [<https://perma.cc/K9FF-75BP>]; EMSI, <http://www.economicmodeling.com> [<https://perma.cc/5V6Q-QYA6>]; INDEED, <https://www.indeed.com> [<https://perma.cc/AAS5-2X6P>].

56. See *infra* Part VI.

57. See *infra* Part VII.

To have a chance of succeeding, an efficiency case for a merger affecting a labor market must show that post-merger reorganization will decrease the need for workers *and* will not lower total production. Both of these requirements are essential. A merger that decreases the need for workers may represent nothing more than an exercise of monopsony power, but in that case, *ceteris paribus*, it will also reduce production. By contrast, a merger that eliminates duplication can also reduce the need for workers, but production will not go down. Indeed, it should go up to the extent that the post-merger firm has lower costs. For example, a merger of two automobile manufacturers, such as Daimler (Mercedes-Benz) and Chrysler might result in a consolidation of dealerships. To the extent these dealerships can sell both brands in one facility, thus reducing distribution costs, the merger might qualify for the efficiency defense even if employment in dealerships is reduced.⁵⁸ But in that case we would expect that the firm's product output would, if anything, increase as its distribution costs went down.

III. LACK OF COMPETITION IN THE LABOR MARKET: THEORY AND EVIDENCE

To understand the impact of a lack of competition in the labor market, consider the only hair salon in a small town.⁵⁹ As the only purchaser of the labor of hair dressers, it is likely to have monopsony power in that market. To simplify further, assume that the labor of hairdressers is the only input that the salon needs in order to function. Suppose the hair salon owner works with one hairdresser, who is paid \$8 per hour. This one hairdresser generates a revenue of \$11 per hour and there are no other costs. As a result, the owner makes a profit of \$3 per hour (\$11 revenue minus \$8 wages) on this first hire. To attract a second hairdresser, the owner would have to pay \$10 per hour, because this second hairdresser would rather not work than earn just \$8 per hour, or perhaps because she lives further away from the hair salon than the first hairdresser. This is consistent with the general economic observation that supply curves slope upward, including those in the labor market. That is, a firm starts out with the lowest cost sources of supply and each incremental unit of supply comes in at a higher cost.⁶⁰

A second hairdresser would generate an additional revenue of \$11 per hour as well. This hairdresser still brings in \$1 (\$11 revenue minus \$10 wages) of net profit and should be hired if nothing else changes. A profit-maximizing employer would continue to hire additional hairdressers as long as the incremental revenue each one produces exceeds his or her wage.

58. The situation is hypothetical. Although the Daimler-Chrysler merger did occur, it was not challenged. On the merger, see *Company History*, DAIMLER, <https://www.daimler.com/company/tradition/company-history/1995-2007.html> [<https://perma.cc/5V79-E9BZ>].

59. On the simple economics, see V. Bhaskar, Alan Manning & Ted To, *Oligopsony and Monopsonistic Competition in Labor Markets*, 16 J. ECON. PERSP. 155 (2002); William M. Boal & Michael R. Ransom, *Monopsony in the Labor Market*, 35 J. ECON. LIT. 86 (1997); Richard Dickens, Stephen Machin & Alan Manning, *The Effects of Minimum Wages on Employment: Theory and Evidence from Britain*, 17 J. LABOR ECON. 1 (1999).

60. See RONALD G. EHRENBERG & ROBERT S. SMITH, *MODERN LABOR ECONOMICS: THEORY AND PUBLIC POLICY* 135 (12th ed. 2015).

However, workers who work in the same role typically have to be paid the same amount.⁶¹ So, if the salon owner hired this second hairdresser, he or she would also have to pay the first hairdresser \$10 per hour instead of \$8, and would make only \$1 of profit per hour from the first hairdresser instead of \$3. If the salon owner hires the two hairdressers for \$10 per hour each, the owner makes \$1 profit on each, for a grand total of \$2. Two dollars an hour of profit is less than the \$3 an hour of profit that the owner can make when he or she works with just the first hairdresser. Therefore, the most profitable strategy in this case is for the owner to hire just one hairdresser, pay a low wage of \$8 instead of \$10, and produce only \$11 of revenue per hour instead of \$22, or a 50% cut in production.

This example illustrates the depressing effect of monopsony on wages and production. The nondiscriminating monopsonist declines to hire incremental workers even though each of those workers considered individually brings in more revenue than that worker's wage. This outcome also produces a "deadweight" loss identical to the loss produced when a monopolist reduces output in a product market. In this case the resources that would have been provided by the second hair dresser go unused, even though they were worth more than they cost.⁶²

There are several important conclusions to draw from this illustration. First, the whole story cannot even take off if workers are paid according to the revenue that they are adding, i.e.—in economics jargon—if wages are equal to marginal productivity. In this case, the first hairdresser would be paid \$11 already, so there is nothing to gain by not adding the second hairdresser.

Second, the existence of monopsony power has important implications for the levels of wages and production. In a competitive labor market, each recruiting firm is small (a drop in the proverbial bucket) and it can hire as many workers as it wants at the market wage. In a monopsonistic labor market, the hiring firm has market power and hiring more workers necessitates an increase in wages. Therefore, if the labor market is perfectly competitive, wages are equal to marginal productivity and there is no incentive for companies to hire fewer workers to make higher profits by depressing wages. If the labor market is not perfectly competitive and companies are in a position to be able to pay workers below their marginal productivity, then wages and production are both lower than under the competitive equilibrium.

Third, this example shows that having to increase wages in order to attract more workers is a sign of monopsony power. In a competitive market, a firm can already have all the workers it wants by paying the market wages. So, a firm that unilaterally increases its wage by even a little bit can attract all of the workers in the market: in economics jargon, we say that the elasticity of labor supply (the percent increase in employment in reaction to a 1% increase in wages) to the individual firm is infinite when the market is perfectly competitive. In a monopsonistic labor market, the hiring firm has market power and hiring more workers necessitates an increase in wages. In this case, the elasticity of labor supply to the individual firm is not infinite, but

61. That is, the theory of monopoly generally assumes that the monopolist is not able to engage in price discrimination. The availability of price discrimination can result in greater or smaller output, depending on the circumstances, and also has ambiguous welfare effects. *See, e.g.,* MICHAEL E. WETZSTEIN, *MICROECONOMIC THEORY: CONCEPTS AND CONNECTIONS* 551 (2d ed. 2013). On antitrust implications, see 3A AREEDA & HOVENKAMP, *supra* note 7, ¶ 721.

62. *See* BLAIR & HARRISON, *supra* note 3, at 45.

finite: only a few more workers will come to the firm for any small increase in wages. Therefore, empirically speaking, a small elasticity of labor supply to the individual firm (i.e. the fact that an increase in wages only attracts a limited number of workers, or equivalently the fact that a decrease in wages only drives away a limited number of workers) is a sign of labor market monopsony.

The key message from economic theory is that as one moves away from the competitive equilibrium towards a situation of monopsony in the labor market, wages and production *both* generally tend to decrease. This also explains why labor cartels such as the eBay/Intuit anti-poaching agreement are anticompetitive.⁶³ If the marginal value of a software engineer to each firm is \$50 per hour, then each would hire as long as the next engineer produced more revenue than labor cost. But the no-poach agreement enables the two firms together to behave in the same way that a single firm monopsonist would behave in our hairdresser example above.⁶⁴ In that case the firms maximize their own profits by restricting output and paying less than the marginal contribution of each employee.

Empirical labor economics has studied the topic of monopsony for some time. The key findings from this literature are convincing that monopsony power exists, and that workers are paid below their marginal productivity.⁶⁵ This literature has examined a number of different occupations and industries in the US. The elasticity of labor supply to the individual firm (percent increase in employment in reaction to a 1% change in wages) is estimated to be between 0.1 and 4, with most estimates being below 2.⁶⁶ In a competitive labor market, this elasticity should tend towards infinity.⁶⁷ The fact that these numbers are small indicates that the labor market is not perfectly competitive and monopsony power exists. The inverse of the elasticity also gives us an estimate of the level of worker productivity relative to wages. An elasticity of two implies that worker productivity is 50% (1/2) higher than wages. Hence, workers are paid significantly less than their marginal productivity.

For the purpose of a merger review in labor markets, the most important question is whether a merger is likely to increase the amount of monopsony in a labor market, thus reducing wages and output. In the case of a merger to a monopsony with a 100% market share that answer is clear, based on little more than the theory of monopsony presented above. For example, if eBay and Intuit are the only two firms bidding for a particular group of software engineers, a merger between them would create a monopsony in that market.

63. See *supra* text accompanying note 29.

64. This is simply the flip side of the observation that a well-functioning cartel has the same price and output that a monopolist in the same market would have. See HOVENKAMP, *supra* note 43, § 4.1.

65. See ALAN MANNING, MONOPSONY IN MOTION: IMPERFECT COMPETITION IN LABOR MARKETS (2003); Alan Manning, *Imperfect Competition in the Labor Market* 973, in 4 HANDBOOK OF LABOR ECONOMICS (Orley C. Ashenfelter & David Card, eds., 2011), <http://www.sciencedirect.com/science/article/pii/S0169721811024099> [<https://perma.cc/Q3JW-GS7Z>]; Orley C. Ashenfelter, Henry Farber & Michael R Ransom, *Labor Market Monopsony*, 28 J. LAB. ECON. 203 (2010); William M. Boal & Michael R Ransom, *Monopsony in the Labor Market*, 35 J. ECON. LIT. 86 (1997).

66. Manning, *supra* note 65.

67. See *id.*

But what if the hiring market contains more than two firms, and the merger simply lessens the number of firms who are hiring; that is, it increases labor market concentration in that market as measured by the HHI?⁶⁸ Here the theory of labor market monopsony takes its cue from the vast literature linking market concentration in selling markets to noncompetitive performance.⁶⁹

The sources of the relationship between concentration and price/output are manifold and complex, and there is no point in rehearsing the entire literature here.⁷⁰ Nevertheless, a few observations are important. First, because most mergers are reviewed prior to their occurrence⁷¹ we do not test actual relationships between merger-induced increases in concentration and product (or labor) prices in each specific market individually. Rather, we employ concentration data plus some evidence of other market factors to make predictions.

Ceteris paribus, as labor market concentration levels rise, predicted wages decline. This can be true for several reasons. Most simply, a market with fewer firms is more susceptible to express collusion, or agreements setting wages or dividing markets. Further, the history of enforcement in that area shows that many firms are prone to fix wages when they can.⁷² In addition, the firms may engage in one of several types of oligopsony behavior which, while falling short of express collusion, nevertheless serves to coordinate their wages and output.⁷³ Indeed, many of these agreements are unreachable under the antitrust laws because the price fixing statute, section 1 of the Sherman Act, requires an express agreement.⁷⁴ As a result it is all the more important that merger law be applied in these cases because, once the merger has occurred, the law of collusion will not be able to reach them.⁷⁵ Prima facie there is no reason to doubt that the same concentration factors that facilitate oligopoly behavior in product (selling) markets work in labor (purchasing) market as well. Indeed, follow-the-leader wage setting and inter-employer exchanges of wage and

68. See *supra* text accompanying notes 28–29.

69. See, e.g., Richard Schmalensee, *Inter-Industry Studies of Structure and Performance*, in 2 HANDBOOK OF INDUSTRIAL ORGANIZATION 951, 988 (Richard Schmalensee & Robert D. Willig eds., 1989) (finding strong correlations between concentration and price levels); William N. Evans, Luke M. Froeb & Gregory J. Werden, *Endogeneity in the Concentration-Price Relationship: Causes, Consequences, and Cures*, 41 J. INDUS. ECON. 431 (1993) (same; airline industry).

70. See Hovenkamp & Shapiro, *supra* note 36. Recent literature is summarized in JONATHAN B. BAKER, WASH. CTR. FOR EQUITABLE GROWTH, MARKET POWER IN THE U.S. ECONOMY TODAY (2017), <https://equitablegrowth.org/market-power-in-the-u-s-economy-today> [<https://perma.cc/AD42-7S2F>].

71. Under the Hart-Scott-Rodino Act, mergers of the requisite minimum size are reported in advance and the government has an opportunity to challenge them before the transaction is completed. 15 U.S.C. § 18a (2012).

72. See *infra* note 120.

73. The literature on implicit oligopoly coordination is also substantial. See, e.g., MICHAEL E. PORTER, COMPETITIVE STRATEGY: TECHNIQUES FOR ANALYZING INDUSTRIES AND COMPETITORS 93–95, 106 (1980).

74. 15 U.S.C. § 1 (2012) (prohibiting “contracts,” “combinations,” and “conspiracies”).

75. See Hovenkamp, *supra* note 8.

salary information⁷⁶ appear to be common in employment markets just as similar types of behaviors are observed in product markets.⁷⁷

In sum, well accepted methodologies justify making a prima facie case against a merger based on the overall level of concentration in the affected labor market, as well as the extent to which the merger increases concentration.⁷⁸ Labor market concentration can be defined by analogy with product market concentration. One can use the share of each company among job vacancies in a labor market in order to calculate labor market concentration using the Herfindahl-Hirschman index.

The HHI for the labor market using vacancy shares can be calculated using a database of U.S. vacancies acquired from vendors such as Emsi,⁷⁹ BurningGlass,⁸⁰ or Indeed.⁸¹ One important question is what the definition of the labor market should be: we offer a plausible but preliminary discussion of the appropriate definition here.

Azar, Marinescu, Steinbaum, and Taska⁸² calculate labor market concentration using 2016 job postings data from Burning Glass Technologies, a company that collects all jobs posted online in the United States. The authors define a labor market as an occupation by commuting zone by quarter: this would be, for example, accountants and auditors in the Philadelphia commuting zone in the first quarter of 2016.⁸³ They thus calculate vacancy shares and HHIs of market concentration for all labor markets, defined by a combination of occupation at the SOC-6 level⁸⁴ and commuting zone. An SOC-6 level occupation is a reference to a list of “Standard Occupational Classifications” maintained by the Bureau of Labor Statistics.⁸⁵ The “6 level” reference is to the level of detail.⁸⁶ Occupations are assigned a six-digit code, and the sixth digit is the highest level of classification.

76. See, e.g., *Todd v. Exxon*, 275 F.3d 191 (2d Cir. 2001) (condemning exchange of salary information of geologists among petroleum refiners where the intent was to suppress wages).

77. See, e.g., *United States v. Container Corp.*, 393 U.S. 333 (1969) (condemning exchange of product price information).

78. Hovenkamp & Shapiro, *supra* note 36.

79. EMSI, <http://www.economicmodeling.com> [<https://perma.cc/5V6Q-QYA6>].

80. BURNING GLASS TECHNOLOGIES, <http://burning-glass.com> [<https://perma.cc/B8Z3-T3SG>].

81. INDEED, <https://www.indeed.com> [<http://perma.cc/AAS5-2X6P>].

82. Azar et al., *Online Vacancy Data*, *supra* note 32.

83. *Id.*

84. On the meaning of this classification, see *infra* text accompanying notes 120–21.

85. See BUREAU OF LABOR STATISTICS, U.S. DEP'T OF LABOR, OCCUPATIONAL EMPLOYMENT STATISTICS (2017), https://www.bls.gov/oes/current/oes_stru.htm [<https://perma.cc/2A8V-WQQQ>].

86. For example, “Life, Physical and Social Science Occupations” (19-0000) is divided into four minor groups: “Life Scientists” (19-1000), “Physical Scientists” (19-2000), “Social Scientists and Related Workers” (19-3000), and “Life, Physical and Social Science Technicians” (19-4000). Life Scientists contains broad occupations such as “Agriculture and Food Scientists” (19-1010) and “Biological Scientists” (19-1020). The broad occupation Biological Scientists includes detailed occupations such as “Biochemists and Biophysicists” (19-1021) and “Microbiologists” (19-1022). See *id.*

The HHI for a market m (occupation and commuting zone) and quarter t is:

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

Where the variable J is the total number of firms posting in market m and quarter t . $s_{j,m,t}$ is the share of a firm in the market defined as the sum of vacancies posted online by firm j in market m and quarter t divided by total vacancies posted on online in market m and quarter t by all firms J . To use the numerical example for the HHI developed above, imagine a labor market with five firms each posting ten jobs in the market. Then, each firm has a 20% market share and the market's HHI is $20^2 + 20^2 + 20^2 + 20^2 + 20^2$, or 2000. If two of these firms should merge there would now be one firm with a 40% market share and the HHI would read $40^2 + 20^2 + 20^2 + 20^2$, or 2800.

On average, labor markets are highly concentrated: the average HHI is 3953, which is well above the 2500 threshold for high concentration according to the Merger Guidelines.⁸⁷ Concentration varies by occupation and city, with larger cities being less concentrated. This is consistent with the intuition that a larger urban area will have more employers of a particular type within a commuting zone. For example, while the small town may have only one hair salon, a large city almost certainly has several, who compete with one another for qualified hair dressers. Assuming that the hair dressers have sufficient mobility within that area,⁸⁸ the result will be higher wages or salaries. Figure 1 shows these concentration levels across the country.⁸⁹

87. 2010 HORIZONTAL MERGER GUIDELINES, *supra* note 13, § 5.3.

88. On the relevance of noncompetition covenants see *infra* Part VI.

89. The figure is taken from Azar et al., *Online Vacancy Data*, *supra* note 32, at 24 fig.1.

Figure 1

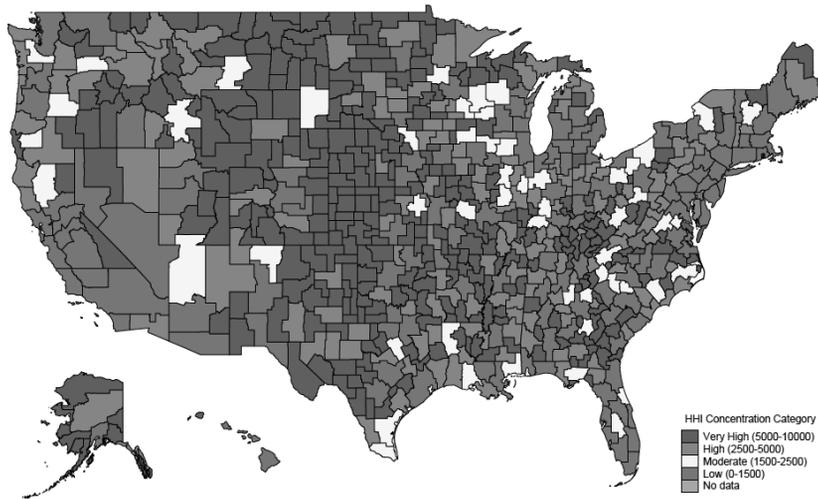


Figure 1. Average HHI by commuting zone, based on vacancy shares. This figure shows the average of the Herfindahl-Hirschman Index by commuting zone code for the top 200 SOC-6 occupations (ranked based on the number of vacancies) over the period 2016Q1-2016Q4 in the Burning Glass Technologies dataset. The categories we use for 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 by a given firm in a given market (6-digit SOC by commuting zone) and year-quarter divided by total vacancies posted in that market and year-quarter.

Having shown that the majority of labor markets are highly concentrated, the next natural question is whether higher concentration reduces wages. Azar, Marinescu and Steinbaum study the impact of labor market concentration on wages using 2010-2013 job postings data from the largest online job board in the United States, CareerBuilder.com.⁹⁰ The occupations covered in Azar, Marinescu and Steinbaum include the most frequent occupations among CareerBuilder vacancies, plus the top occupations in manufacturing and construction.⁹¹

The authors show that average posted wages are strongly negatively correlated with labor market concentration as measured by HHI.⁹² However, this correlation alone cannot be counted as strong evidence that higher concentration depresses wages in a causal sense. Indeed, economic conditions can differ considerably across labor markets: for example, in more depressed labor markets, there are fewer job postings, which mechanically leads to higher concentration. Since wages in

90. Azar et al., *Labor Market Concentration*, *supra* note 34. Monster.com is similar in size.

91. *See id.*

92. *Id.* at 26 fig.2; accord COUNCIL OF ECONOMIC ADVISERS, *supra* note 6; Efraim Benmelech, Nittai Bergman & Hyunseob Kim, *Strong Employers and Weak Employees: How Does Employer Concentration Affect Wages* (Nat'l Bureau of Econ. Research, Working Paper No. 24307, 2018), <http://www.nber.org/papers/w24307> [<https://perma.cc/4J4F-SDM5>].

depressed labor markets also tend to be lower, this could drive the negative correlation between concentration and wages.

As a result, it is necessary to look at the data in other ways in order to show that concentration likely does lead to lower wages in a causal sense. In particular, instead of comparing different labor markets, one can look at how changes in concentration within a given market over time affects wages. The data indicate that when labor market concentration increases, posted wages decrease.⁹³ Furthermore, to account for economic conditions in each specific market, one must control for the number of job postings divided by the number of job applications, also called “labor market tightness” in economic jargon.⁹⁴ When tightness is high, the market is more favorable to workers in that there are many job postings compared to the number of applications, and wages are therefore higher. Tightness is a very good control for the market situation because it accounts for both changes in labor demand (changes in job postings) and changes in labor supply (changes in the number of job applications). Even after controlling for tightness, the impact of labor market concentration on wages remains negative and statistically significant.⁹⁵ This, together with additional empirical analysis performed in the paper, shows that the negative effect of concentration on wages is likely to be causal and not just driven by unaccounted for market conditions.

How large is the impact of labor market concentration on posted wages? Depending on the specific statistical model used, a 10% increase in concentration leads to a 0.3% to 1.3% decrease in wages.⁹⁶ Furthermore, the impact of concentration on wages is larger in smaller cities.⁹⁷ Therefore, smaller cities are doubly disadvantaged by having higher levels of labor market concentration and by suffering more from an increase in concentration.

In sum, the evidence shows that it is straightforward to calculate labor market concentration with vacancy data. Labor market concentration can be very high, especially in smaller cities where it is routinely above the 2500 HHI threshold for high concentration according to the Horizontal Merger Guidelines. Furthermore, higher concentration is robustly associated with lower wages.⁹⁸

93. Azar et al., *Labor Market Concentration*, *supra* note 34, at 24 tbl.2.

94. *Id.* at 12.

95. *Id.* at 24 tbl.2.

96. *Id.*

97. *Id.* at 27 fig.3.

98. For a discussion showing a negative association between wages and concentration, see Brad Hershbein, Claudia Macaluso & Chen Yeh, *Concentration in U.S. Local Labor Markets: Evidence from Vacancy and Employment Data* (W.E. Upjohn Inst., Working Paper, 2019); Elena Prager & Matt Schmitt, *Employer Consolidation and Wages: Evidence from Hospitals* (Wash. Ctr. for Equitable Growth, Working Paper, 2019); Kevin Rinz, *Labor Market Concentration, Earnings Inequality, and Earnings Mobility*, (Ctr. for Admin. Records Research & Applications, Working Paper No. 2018-10, 2018); Yue Qiu & Aaron Sojourner, *Labor-Market Concentration and Labor Compensation* (IZA Inst. of Labor Econ., Working Paper No. 12089, 2019).

IV. ASSESSING THE RELEVANT MARKET FOR LABOR MARKET
MERGERS: SSNIP AND SSNRW

Section 7 of the Clayton Act requires a court to identify some “line of commerce” and some “section of the country” in which a merger threatens to injure competition.⁹⁹ Ever since the Supreme Court’s *Brown Shoe* decision it has become conventional to identify these two statutory requirements, respectively, as a relevant product market and a relevant geographic market,¹⁰⁰ subject to the ordinary antitrust tools of market definition.¹⁰¹ Labor markets are no exception. The boundaries of labor markets are driven mainly by employee skills or training. Geographic markets are driven mainly by the location and mobility of current or prospective employees.

On the latter point, applications for a job decline rapidly with distance, although most applications are still for employers located outside the applicant’s zip code.¹⁰² We suggest a provisional definition of a labor market as a commuting zone by six-digit Standard Occupational Classification (SOC) by quarter.¹⁰³ We now justify the choice for each of these three elements: the geography, occupation, and time.

Traditional geographic markets for products are frequently defined in terms of shipping costs: the higher the cost in relation to value, the smaller the market.¹⁰⁴ Under that definition, markets for many manufactured products are nationwide or even worldwide, although markets for perishable items or those with high shipping costs in relation to value can be much smaller. Service markets are often smaller as well. Measuring geographic markets for labor is more complex. Commuting “costs” include not merely the price of a subway ticket or gasoline, but also time and convenience, and these things frequently vary from one commuter to another.

Observed Commuting Zones (CZs) can be used to define geographic labor markets.¹⁰⁵ Commuting zones are geographic area definitions comprising clusters of counties that were developed by the United States Department of Agriculture (USDA).¹⁰⁶ They 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.¹⁰⁷ According to the USDA, “commuting zones were developed without regard to a minimum population

99. 15 U.S.C. § 18 (2012).

100. See *Brown Shoe Co. v. United States*, 370 U.S. 294, 324–25 (1962) (“The ‘area of effective competition’ must be determined by reference to a product market (the ‘line of commerce’) and a geographic market (the ‘section of the country’).”).

101. On market definition under the antitrust laws, see 2B AREEDA & HOVENKAMP, *supra* note 21, chs. 5C–5F.

102. Ioana Marinescu & Roland Rathelot, *Mismatch Unemployment and the Geography of Job Search*, 10 AM. ECON. J.: MACROECONOMICS 42 (2018).

103. This follows the methodology in Azar et al., *Online Vacancy Data*, *supra* note 32.

104. See 2B AREEDA & HOVENKAMP, *supra* note 21, ¶ 552.

105. See Azar et al., *Online Vacancy Data*, *supra* note 32.

106. See U.S. Dep’t of Agric., *Commuting Zones and Labor Market Areas* (last updated Jan. 19, 2018), <https://www.ers.usda.gov/data-products/commuting-zones-and-labor-market-areas/> [<https://perma.cc/7AQJ-CZJV>].

107. *Id.*

threshold and are intended to be a spatial measure of the local labor market.”¹⁰⁸ More than 80% of job applications occur where the job applicant and prospective employer are within the same commuting zone.¹⁰⁹

Six-digit SOC codes can assist us in defining markets by occupational category. To determine whether this definition is sensible for the analysis of a monopsonistic labor market, it is important to examine how posted wages affect the number of applicants that a job posting receives. This relationship between wages and the number of applicants is a version of the elasticity of labor supply discussed above. A small elasticity of labor supply, i.e. a wage increase that has a small effect on the number of applicants, signals a less competitive labor market.¹¹⁰ However, whether the market is competitive or not, we expect that higher wages attract as many or more applicants than lower wages.

Surprisingly, within a six-digit SOC occupation, job postings with higher wages attract significantly *fewer* applicants than jobs with lower wages.¹¹¹ This negative relationship between wages and the number of applicants prevails on average across all six-digit SOC codes and is driven by the fact that workers within a six-digit SOC code can be very different from each other. For example, among accountants and auditors, which is a six-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.”¹¹² This shows that generally, a six-digit SOC is likely too broad a definition of the labor market. One can also define a labor market by a job title and examine the relationship between wages and applicants for all job titles.¹¹³ Within a job title, the relationship between wages and the number of applicants is no longer negative but becomes positive: a 10% increase in the posted wage is associated with a 7.7% increase in the number of applicants (an elasticity of 0.77).¹¹⁴ Therefore, the elasticity of labor supply is far from being infinite as it would be in a perfectly competitive labor market.

Based on the elasticities of labor supply within a six-digit SOC occupation and within a job title, we can use the equivalent of a “small significant non-transitory increase in price” (SSNIP) test for the labor market to determine which labor market is relevant for antitrust analysis. Since 1982, the Horizontal Merger Guidelines have included the hypothetical monopolist test to determine whether a product market could be profitably monopolized.¹¹⁵ The idea of the hypothetical monopolist test is

108. Azar et al., *Online Vacancy Data*, *supra* note 32.

109. See Marinescu & Rathelot, *supra* note 102. Compare the Elzinga-Hogarty test for geographic markets, which looks at the extent to which goods are shipped across a line provisionally defined as the boundary of the geographic market. See Kenneth G. Elzinga & Thomas F. Hogarty, *The Problem of Geographic Market Delineation in Antimerger Suits*, 18 ANTITRUST BULL. 45 (1973); see also 2B AREEDA & HOVENKAMP, *supra* note 21, ¶ 550a3.

110. Boal & Ransom, *supra* note 42.

111. Ioana Marinescu & Ronald Wolthoff, *Opening the Black Box of the Matching Function: The Power of Words* (Nat’l Bureau of Econ. Research, Working Paper No. 22508, 2016), <https://doi.org/10.3386/w22508> [<https://perma.cc/77MW-KFHA>].

112. See *id.*

113. See *id.*

114. See *id.*

115. See Janusz A. Ordover & Robert D. Willig, *Economics and the 1992 Merger*

to use as the relevant antitrust market the smallest market for which a hypothetical monopolist (or cartel) that controlled that market would find it profitable to implement a SSNIP.¹¹⁶

In practice, the methodology hypothesizes a specified price increase, typically 5% and for a period of at least a year, and considers whether the monopolist or cartel that increases the price would lose so many sales that the price increase would be unprofitable.¹¹⁷ This is a function mainly of the number of lost sales (elasticity) and price-cost margins.¹¹⁸ The more elastic the demand, the more sales will be lost in response to the price increase. The higher the margin, the more costly those losses will be.

The analogous question for considering monopsony in the labor market would be to identify the smallest labor market for which a hypothetical monopsonist in that market would find profitable to implement a “small and significant but non-transitory reduction in wages” (SSNRW). The more elastic the labor supply, the more workers will be lost to a decrease in wages. The formula for the critical elasticity of labor supply to the individual firm is the direct equivalent of the formula for the critical elasticity of demand. If the elasticity of labor supply is below the critical elasticity, then the market is an appropriately defined relevant market for the purpose of antitrust merger analysis. If the elasticity of labor supply is greater than the critical elasticity, then the market is defined too narrowly. Since the critical elasticity is always positive and the elasticity of labor supply is estimated to be negative within a six-digit SOC, a six-digit SOC is typically too broad a market definition under this methodology.¹¹⁹ A job title would be a more reasonable market definition according to this test.

SOC codes may also affect assessments of the degree of competition in a market in other ways. To illustrate, at the sixth level, the occupation of “cooks” is divided into “fast food,” “institutions and cafeteria,” “private household,” “restaurant,” “short order,” and “all other” cooks.¹²⁰ While this classification might be useful for

Guidelines: A Brief Survey, 8 REV. INDUS. ORG. 139 (1993); Gregory J. Werden, *The 1982 Merger Guidelines and the Ascent of the Hypothetical Monopolist Paradigm*, 71 ANTITRUST L.J. 253 (2003).

116. See HOVENKAMP, *supra* note 43, § 3.2; David Scheffman, Malcolm Coate & Louis Silvia, *Twenty Years of Merger Guidelines Enforcement at the FTC: An Economic Perspective*, 71 ANTITRUST L.J. 277 (2003).

117. The methodology is referred to as “critical loss analysis.” Barry C. Harris & Joseph J. Simons, *Focusing Market Definition: How Much Substitution is Necessary?*, 12 RES. L. & ECON. 207 (1989); see also Joseph Farrell & Carl Shapiro, *Improving Critical Loss Analysis*, ANTITRUST SOURCE, Feb. 2008, at 1.

118. See Carl Shapiro, *The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years*, 77 ANTITRUST L.J. 49 (2010).

119. For further discussion and a mathematical treatment of the “small and significant but non-transitory reduction in wages,” see Azar et al., *Online Vacancy Data*, *supra* note 32.

120. See BUREAU OF LABOR STATISTICS, *supra* note 85, which adopts the following classification scheme:

- 35-0000 Food Preparation and Serving Related Occupations
- 35-2000 Cooks and Food Preparation Workers
- 35-2010 Cooks
- 35-2011 Cooks, Fast Food

labor purposes it is hardly clear that employees in these individual sixth-level classifications do not compete with one another on the job market. For example, a “short order” cook might compete for a job notice requesting a “restaurant” or “fast food” cook, or vice-versa. As a result, there may be more competition for a particular job than the SOC classifications suggest. As is true in so many areas involving government classifications, including census of manufacturing data, the correlation between government classification data and relevant antitrust market can be poor.¹²¹ One reason that this is true is that antitrust market definition proceeds not by looking merely who is currently in a market, but rather who would be in the market in response to a wage increase or decrease.¹²²

In sum, 6-digit SOC codes may be too broad, depending on the circumstances, and job titles may be a better definition of a labor market. However, it may be prudent to adopt the more conservative definition of a labor market. Therefore, we conclude that a 6-digit SOC occupation is a reasonable and perhaps conservative *presumptive* definition of a labor market, in the sense that it may under-estimate effective labor market concentration. In any event, the SSNRW equivalent of the SSNIP test would have to be estimated individually for each proposed merger under consideration because of possible anticompetitive impact on wages, much as the SSNIP test is used in product markets today.

Once the market is defined, concentration must be computed. For this, one must choose a time period: this 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.¹²³ 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.

Having computed the HHI for the labor market based on vacancy shares in the commuting zone, six-digit SOC and quarter, one can use the thresholds from the Horizontal Merger Guidelines to make a *prima facie* case against a merger that significantly increases labor market concentration.

V. IDENTIFYING “HORIZONTAL” MERGERS IN LABOR MARKETS

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 threatening increasing concentration in the labor market. Such a

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- 35-2012 Cooks, Institution and Cafeteria
 - 35-2013 Cooks, Private Household
 - 35-2014 Cooks, Restaurant
 - 35-2015 Cooks, Short Order
 - 35-2019 Cooks, All Other

121. See W. KIP VISCUSI, JOSEPH E. HARRINGTON, JR. & JOHN M. VERNON, *ECONOMICS OF REGULATION AND ANTITRUST* 158–59 (4th ed. 2005).

122. See HOVENKAMP, *supra* note 43, § 3.6d.

123. See BUREAU OF LABOR STATISTICS, U.S. DEP’T OF LABOR, TBL. A-12, UNEMPLOYED PERSONS BY DURATION OF UNEMPLOYMENT, <https://www.bls.gov/news.release/empst.t12.htm> [<https://perma.cc/2K7A-6RCK>].

merger is horizontal if the two firms compete for hiring in the same labor market, whether or not they compete in the product market. A prima facie case against a merger that significantly increases labor market concentration can be made based on the HHI, *independently* of whether the merger would also increase concentration in the product market.

Extreme product differentiation can complicate this analysis, particularly in cases where the products alleged to be competing use different inputs or technologies in their production. A well-known example in a product market is mergers involving firms that make metal cans with those that make glass bottles.¹²⁴ While the two are interchangeable for many uses, such as commercial production of processed foods, they nevertheless exhibit significant differences in inputs, technology and production costs. These may qualify or even prevent one from concluding that the two are in the same relevant market for merger analysis.

One way of approaching this problem is by considering whether a grouping of sales is an appropriate “collusive group”—that is, whether it is a group that could profitably reduce aggregate output and increase price.¹²⁵ Indeed, most of the analysis in that portion of the Merger Guidelines that deal with concentration-increasing mergers presumes that the feared harms to competition will come from either collusion or some kind of coordinated interaction.¹²⁶

Recent anti-poaching litigation can thus shed some light on the question of identifying mergers that are horizontal in the markets in which they purchase labor.¹²⁷

124. *United States v. Continental Can Co.*, 378 U.S. 441 (1964).

125. *See* Herbert Hovenkamp, *Markets in IP and Antitrust*, 100 GEO. L.J. 2133 (2012); Gregory J. Werden, *The History of Antitrust Market Delineation*, 76 MARQ. L. REV. 123 (1992). The idea came from Kenneth D. Boyer, *Industry Boundaries*, in *ECONOMIC ANALYSIS AND ANTITRUST LAW* 70, 73 (Terry Calvani & John Siegfried eds., 2d ed. 1988); and Gregory J. Werden, *Is There a Principle for Defining Industries? Comment*, 52 S. ECON. J. 532 (1985). *See also* Gregory J. Werden, *The Use and Misuse of Shipments Data in Defining Geographic Markets*, 26 ANTITRUST BULL. 719, 721 (1981) (“A market for antitrust purposes is any product or group of products and any geographic area in which collective action by all firms (as through collusion or merger) would result in a profit maximizing price that significantly exceeded the competitive price.”) (emphasis omitted).

126. 2010 HORIZONTAL MERGER GUIDELINES, *supra* note 13, § 7.

127. *See, e.g., In re VHS of Michigan, Inc.*, 601 F. App’x. 341 (6th Cir. 2015) (approving employee class action in case alleging that eight hospitals conspired to suppress nurses’ wages); *Todd v. Exxon Corp.*, 275 F.3d 191 (2d Cir. 2001) (Sotomayor, J.) (employees’ allegations of information exchanges sufficient to support claim of conspiracy to suppress wages of oil refining defendants); *Law v. NCAA*, 134 F.3d 1010 (10th Cir. 1998) (condemning agreement among NCAA colleges to limit salaries of junior basketball coaches); *California v. eBay, Inc.*, No. 5:12-CV-05874-EJD, 2014 WL 4273888 (N.D. Cal. Aug. 29, 2014) (approving settlement in case alleging agreement among tech firms not to hire each other’s employees); *In re High-Tech Emp. Antitrust Litig.*, 985 F. Supp. 2d 1167 (N.D. Cal. 2013) (tech firms’ “non-poaching” agreement not to solicit one another’s employees; certifying employee class); *Hall v. Thomas*, 753 F. Supp. 2d 1113 (N.D. Ala. 2010) (excluding expert testimony concerning causation in case alleging that defendant unlawfully suppressed wages of workers in poultry processing plant); *Reed v. Advocate Health Care*, 268 F.R.D. 573 (N.D. Ill. 2009) (complaint of hospital conspiracy to suppress nurses’ wages; denying class certification for failure to show impact by common proof); *Mueller v. Wellmark, Inc.*, 818

“Anti-poaching” agreements are simply collusion by another name. They occur when employers agree with each other not to hire one another’s workers.¹²⁸ A fundamental principle of market definition for merger analysis is that if two firms can profit by agreeing with one another to fix prices or divide markets, then they are in the same collusive group, which means that they should be treated as competitors for the purpose of merger analysis.¹²⁹ This can occur in the labor market whether or not it also occurs in the product markets of the firms who employ those workers.¹³⁰

For example, eBay has reached a settlement in a case charging eBay and Intuit with participating in an anti-poaching agreement.¹³¹ eBay is an auction site, mainly for third-party sellers of used and new merchandise. Intuit is primarily a manufacturer of computer software, including the popular programs TurboTax and QuickBooks, as well as a number of other programs that mainly provide accounting, payroll, or other management aids to businesses. The firms are not competitors in any product except in the trivial sense that a few eBay sellers offer programs such as Zoho or Xero that compete with Intuit’s QuickBooks and TaxAct or H & R Block Tax software that compete with TurboTax. But even for these, eBay functions merely as a broker. The two firms also have a very minor vertical relationship to the extent that a few third-party sellers also sell TurboTax or QuickBooks on the eBay auction site.¹³² Once again, eBay is merely the broker.

But the hiring market is different, and the overlap between eBay and Intuit is sufficient that the two firms can profit from price fixing or market division agreements covering each other’s software engineers.¹³³ As a result, a complete

N.W.2d 244 (Iowa 2012) (rejecting most parts of claim that health insurer paid discriminatorily low reimbursement rates to chiropractors); *cf.* *Mendoza v. Zirkle Fruit Co.*, 301 F.3d 1163 (9th Cir. 2002) (sustaining documented agricultural laborers’ complaint that fruit growers imported undocumented workers with intent of suppressing wages of documented workers); *see also* Orly Lobel, *The New Cognitive Property: Human Capital Law and the Reach of Intellectual Property*, 93 TEX. L. REV. 789 (2015); Robert E. Bloch & Scott P. Perlman, *Reed v. Advocate Health Care: Anatomy of Class Certification Proceedings in a Wage Conspiracy Case*, ANTITRUST, Summer 2010, at 63.

128. *See* ALAN B. KRUEGER & ERIC A. POSNER, A PROPOSAL FOR PROTECTING LOW-INCOME WORKERS FROM MONOPSONY AND COLLUSION (2018).

129. *See, e.g.*, Boyer, *supra* note 22.

130. Some anti-poaching agreements involve competitors in the product market as well. *See, e.g.*, *United States v. Lucasfilm, Inc.*, No. 10–02220 (RBW), 2011 WL 2636850 (D.D.C. June 3, 2011) (agreement between Lucasfilm and Pixar not to poach one another’s digital animators; court references the firms as “direct competitor[s],” referencing the product market).

131. *California v. eBay, Inc.*, No. 5:12–CV–05874–EJD, 2014 WL 4273888 (N.D. Cal. Aug. 29, 2014).

132. In the vertical context, there has also been some discussion of possible anti-poaching agreements between Amazon and its own suppliers. *See* Eugene Kim, *Amazon’s Aggressive Poaching Tactics in Israel Have Start-Ups Threatening to Abandon AWS*, CNBC (Jan. 12, 2018, 5:12 PM), <https://www.cnbc.com/2018/01/10/amazons-poaching-tactic-leads-lemonade-to-consider-ditching-aws.html> [<https://perma.cc/R368-YCL2>].

133. *See eBay, Inc.*, 2014 WL 4273888; *see also In re High-Tech Emp. Antitrust Litig.*, 985 F. Supp. 2d 1167 (N.D. Cal. 2013) (certifying class action, in alleged no poaching agreement involving Adobe, Apple, Google, Intel, Intuit, Lucasfilm, and Pixar; the plaintiff

analysis of a (purely hypothetical) merger between eBay and Intuit would have to look at labor market overlap and concentration. On the product market side, one can assume that the investigating agency would quickly conclude that the merger does not provide any threat to competition. On the labor market side, however, they may find significant overlaps for different groups of specialized employees and, if concentration levels and the increase in labor concentration are sufficiently high, challenge the merger on that basis. As noted previously, the fact that eBay and Intuit have entered into a no-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. A merger between any two companies that have been shown to engage in anti-poaching agreements is *prima facie* problematic because of the fear of anticompetitive effects in the labor market. Additionally, however, a merger of two firms that are capable of profiting from such an agreement also raises competition concerns, whether or not they have actually engaged in an anti-poaching agreement.

VI. THE RELEVANCE OF NONCOMPETITION AGREEMENTS

A noncompetition agreement is between an employer and an employee and restricts that employee's ability to work for a different employer in the event that the employee quits his or her job.¹³⁴ The difference between a noncompetition agreement and a no-poaching agreement is that the former is purely vertical: it refers to agreements between a single employer and its various employees. The common law generally addressed employee noncompetition agreements under a rule of reason and generally upheld them if they were reasonably confined to a specified subject area, geographic range, and duration.¹³⁵ The trend today is to treat pure noncompetition clauses under tort law or some other statute relating to employment practices.¹³⁶

class members were identified as “software engineers”). The allegations also included claims of interlocking directorates between Apple and at least one director at the other companies. See Bill Singer, *After Apple, Google, Adobe, Intel, Pixar, and Intuit, Antitrust Employment Charges Hit eBay*, FORBES (Nov. 19, 2012, 10:36 AM), <https://www.forbes.com/sites/billsinger/2012/11/19/after-apple-google-adobe-pixar-google-and-intuit-antitrust-employment-charges-hit-ebay/#5b95024625bf> [<https://perma.cc/WCB3-DJCJ>] (noting explicit no-poaching agreements involving Apple, Google, Adobe, Pixar, Intel, and Intuit, including circulation of a “do not call” list instructing employees with hiring authority not to contact the employees of the other participating companies).

134. For a good legal survey of issues and policy, see J.J. Prescott, Norman D. Bishara & Evan Starr, *Understanding Noncompetition Agreements: The 2014 Noncompete Survey Project*, 2016 MICH. ST. L. REV. 369.

135. For a recent example, see *Innovation Ventures v. Liquid Mfg.*, 885 N.W.2d 861 (Mich. 2016). The court did not discuss market power, which antitrust's rule of reason requires. Although the courts have generally not recognized it, the market power at issue should be the power that the employer has in the employment market, which can be quite different from its power in the product market in which it sells.

136. See Michael J. Garrison & John T. Wendt, *The Evolving Law of Employee Noncompete Agreements: Recent Trends and an Alternative Policy Approach*, 45 AM. BUS. L.J. 107, 110–11 (2008).

Relatively few of them have been condemned under the federal antitrust laws.¹³⁷ In any event, a purely vertical noncompetition agreement would also have to be treated under antitrust's rule of reason.¹³⁸

The historical justification for employee noncompete agreements is that they limit various forms of free riding.¹³⁹ In particular, employees might receive costly on-the-job training or knowhow that they could then port uncompensated to a different employer. Alternatively, an employee might learn trade secrets, including such things as customers lists, that could be shared with a new employer to the older employer's detriment. As a result, the law of employee noncompetition agreements has frequently been assessed as a type of quasi-intellectual property protection.¹⁴⁰

Today, however, employee noncompetition agreements are receiving far more critical reviews, with recent writing emphasizing the restrictions on employment mobility that they can impose.¹⁴¹ A White House Report issued in 2016 concludes that noncompetes, particularly among lower salary workers, can reduce worker welfare "and hamper the efficiency of the economy as a whole by depressing wages, limiting mobility, and inhibiting innovation."¹⁴² Recently several states have enacted or considered legislation to limit the range of noncompete agreements or make them unenforceable.¹⁴³

One noticeable and disturbing trend is toward the increased use of employee covenants not to compete by lower wage and less well-trained employees for whom the quasi-IP rationale is less tenable.¹⁴⁴ This has resulted in pushback from several state courts.¹⁴⁵ For example, prior to a 2017 settlement, Jimmy John's, a fast food

137. See *United States v. Empire Gas Corp.*, 537 F.2d 296 (8th Cir. 1976) (refusing to condemn the defendant's widespread use of employee noncompetition agreements as an attempt to monopolize under section 2 of the Sherman Act).

138. See *NYNEX Corp. v. Discon, Inc.*, 525 U.S. 128 (1998) (purely vertical agreement must be treated under rule of reason).

139. See ORLY LOBEL, *TALENT WANTS TO BE FREE: WHY WE SHOULD LEARN TO LOVE LEAKS, RAIDS, AND FREE RIDING* (2013) (stating and critiquing traditional justification).

140. See, e.g., Ronald J. Gilson, *The Legal Infrastructure of High Technology Industrial Districts: Silicon Valley, Route 128, and Covenants Not to Compete*, 74 N.Y.U. L. REV. 575 (1999). For some empirical evidence that this use of employee noncompete agreements is counterproductive, see On Amir & Orly Lobel, *Driving Performance: A Growth Theory of Noncompete Law*, 16 STAN. TECH. L. REV. 833 (2013). See also LOBEL, *supra* note 139.

141. E.g., OFFICE OF ECON. POLICY, U.S. DEP'T OF THE TREASURY, *NON-COMPETE CONTRACTS: ECONOMIC EFFECTS AND POLICY IMPLICATIONS* (2016), <https://www.treasury.gov/resource-center/economic-policy/Documents/UST%20Non-competes%20Report.pdf> [<https://perma.cc/5V4R-LZE9>]; KRUEGER & POSNER, *supra* note 128.

142. WHITE HOUSE, *NON-COMPETE AGREEMENTS: ANALYSIS OF THE USAGE, POTENTIAL ISSUES, AND STATE RESPONSES 5* (2016), https://obamawhitehouse.archives.gov/sites/default/files/non-competes_report_final2.pdf [<https://perma.cc/M9Y6-CSFK>].

143. These are summarized in Yifat Aran, Note, *Beyond Covenants Not to Compete: Equilibrium in High-Tech Startup Labor Markets*, 70 STAN. L. REV. 1235, 1245 (2018).

144. KRUEGER & POSNER, *supra* note 128, at 8; Alan B. Krueger & Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector* (Nat'l Bureau of Econ. Research, Working Paper No. 24831, 2018), <https://www.nber.org/papers/w24831.pdf> [<https://perma.cc/TQC6-54MF>].

145. On recent trends, see Garrison & Wendt, *supra* note 136, at 111–12. See also Jenna

franchisor that produces mainly sandwiches, required all of its employees to sign noncompete agreements.¹⁴⁶ The agreements lasted for two years post termination and forbade a worker from accepting a job with any seller of “‘submarine, hero-type, deli-style, pita, and/or wrapped or rolled sandwiches’ within two miles of any Jimmy John’s location.”¹⁴⁷ Because these covenants applied to all employees, it is highly unlikely that Jimmy John’s had any quasi-intellectual property rights, including customer lists¹⁴⁸ or trade secrets, that justified the covenants.

Although employee noncompetition agreements are vertical, they can have horizontal effects, particularly if multiple employers in a labor market use them. As a result, they can be relevant to the analysis of horizontal mergers. While labor concentration indexes measure the range of competitive choices that employees face, noncompetition agreements serve to limit employee mobility within that range. Most significantly, they can serve to increase the level of effective market concentration to the extent that employees subject to such agreements face fewer competitive choices. To illustrate, suppose an employment market contains five firms, A, B, C, D, and E, and that they hire equal numbers of employees in a certain specialty. But suppose that the employees of two of the firms, A and B, are bound by noncompete agreements that effectively prevent the remaining three firms, C, D, and E, from bidding for their services. Assuming that the noncompete agreements are enforceable, existing employees of A and B are in a situation of monopsony, since there is only one employer that can hire them for the present job function.

From the point of view of the employers, this situation is not quite the same as one in which only three firms in the market are able to compete. While C, D, E cannot compete away existing employees of A and B, firms A and B can compete to hire employees away from C, D, E. That is, a noncompetition agreement prevents a rival firm from competing for the employees of the firm imposing the restraint, but it does not limit that firm from hiring the employees of other firms who are not bound by such agreements. As a result, we would not simply recompute market concentration to count only the three unencumbered firms. For example, in a merger of C and D, two firms that do not use noncompetes, firms A and B would still be able to bid for their employees, meaning that they should be counted as in the market.

Rather, we would count the widespread existence of noncompetition agreements as an exacerbating factor in reducing competition in the labor market that calls for

L. Brownlee & Caitlin A. Kelly, *To Compete or Not to Compete: Illinois’ Movement to Eliminate Noncompete Agreements*, 48 LOY. U. CHI. L.J. 1233 (2017).

146. See *Brunner v. Liautaud*, No. 14-c-5509, 2015 WL 1598106 (N.D. Ill. Apr. 8, 2015) (approving nonantitrust complaint alleging inter alia unreasonably broad noncompete agreements by Jimmy John’s); Matthew Hector, *Jimmy John’s Settles Suit over Noncompete Agreements*, 105 ILL. B. J., no. 2, Feb. 2017, at 14.

147. Viva R. Moffat, *Human Capital as Intellectual Property? Non-Competes and the Limits of IP Protection*, 50 AKRON L. REV. 903, 909 (2016).

148. To the extent that fast food franchises sell to customers on demand, customer lists seem relatively unimportant.

closer scrutiny.¹⁴⁹ It should thus be added to other factors mentioned in the Merger Guidelines as affecting the significance of a given concentration level.¹⁵⁰

VII. THE EFFICIENCY DEFENSE AND LABOR MARKET MERGERS

While section 7 of the Clayton Act does not expressly create an “efficiency defense” against prima facie unlawful mergers, both recent case law and the Horizontal Merger Guidelines recognize such a defense.¹⁵¹ At the same time, however, situations in which merging firms have successfully defended a prima facie unlawful merger by showing the requisite efficiencies are rare.

Under the approach laid out in the 2010 Horizontal Merger Guidelines, the government first makes out a prima facie case that a merger is likely to result in an anticompetitive price increase in at least one affected market.¹⁵² This prima facie case contains a built-in allowance for the “ordinary” efficiencies that are reasonably expected to result from a merger.¹⁵³ The form that the allowance takes is typically an adjustment of the concentration standards so as to be more tolerant than the structural factors would otherwise indicate.¹⁵⁴ As a result, predicted levels of anticompetitive harm to consumers already assumes that the merger will produce unspecified “ordinary” efficiencies. So once the prima facie case has been made out, only additional or “extraordinary” efficiencies can be used to rebut the prima facie case.¹⁵⁵ Given that this efficiencies “allowance” seems to be very generous, it is not surprising that few proponents of mergers are able to show extraordinary efficiencies. Indeed, recent literature indicates that merger policy is, if anything, underdeterrent and has permitted several mergers that have resulted in actual price increases.¹⁵⁶ This

149. In addition, authorities may seek modification of existing noncompetition agreements or to limit the enforceability of noncompetes executed prior to a company’s merger. See William Vorys, *Unreasonable State Restrictions on Business Transactions: The Enforceability of Non-Compete Agreements Post-Merger or Acquisition*, 43 CAP. U. L. REV. 721 (2015). Some state courts are reluctant to enforce employee noncompetition agreement executed in favor of the acquired firm prior to the merger. See, e.g., *Acordia of Ohio, LLC v. Fishel*, 978 N.E.2d 823 (Ohio 2012) (concluding that while pre-merger agreements were not unenforceable per se, the impact of the merger should be considered in examining whether they continued to be reasonable after the merger—“the employees still may challenge the continued validity of the noncompete agreements based on whether the agreements are reasonable and whether the numerous mergers in this case created additional obligations or duties so that the agreements should not be enforced on their original terms”).

150. See, e.g., 2010 HORIZONTAL MERGER GUIDELINES, *supra* note 13, §§ 3, 6.3, 8, 9, 11 (referencing factors of price discrimination, excess capacity, presence of powerful buyers, entry, and failure and exiting assets, respectfully)

151. See Herbert Hovenkamp, *Appraising Merger Efficiencies*, 24 GEO. MASON L. REV. 703 (2017).

152. 2010 HORIZONTAL MERGER GUIDELINES, *supra* note 13, § 10.

153. See Daniel A. Crane, *Rethinking Merger Efficiencies*, 110 MICH. L. REV. 347, 364–67 (2011) (laying out the considerations, including administrative convenience, for and against this approach); Hovenkamp, *supra* note 151 at 708–11.

154. See Crane, *supra* note 153, at 365.

155. 2010 HORIZONTAL MERGER GUIDELINES, *supra* note 13, § 10.

156. *Id.*

could be the result of concentration thresholds that are too generous to the merging firms,¹⁵⁷ but it could also be because the approach taken in the Guidelines gives the firms a greater efficiency credit than their merger actually produces.¹⁵⁸

The 2010 Guidelines do offer a statement about the magnitude of proven efficiencies: they must be sufficient to warrant the conclusion that the post-merger price will be no higher than pre-merger prices.¹⁵⁹ As a result, the net harm to consumers must be zero. For example, if structural evidence predicts a 20% price increase from a horizontal merger after “ordinary” efficiencies are taken into account,¹⁶⁰ then the defendants must show efficiencies that are sufficient to reverse that increase and that these efficiencies will be passed on to the consumer.¹⁶¹ The result must be that the predicted post-merger price is no higher than the prices charged prior to the merger. While the government has the obligation to make out its prima facie case, the burden for the efficiency defense is on the merging firm or firms.¹⁶² This is a sensible assignment of the burden of proof, since firms are in the best position to understand the efficiencies likely to result from their own merger.¹⁶³ Significantly, this approach represents an incorporation of a consumer welfare standard, which will not tolerate any price increase at all. By contrast, under a general

157. Earlier editions of the Merger Guidelines identified markets as “highly concentrated” when the HHI exceeded 1800. The 2010 Guidelines moved that number to 2500. All versions of the Merger Guidelines are maintained in enforcement agency archives. U.S. DEP’T OF JUSTICE ARCHIVES, <https://www.justice.gov/archive> [<https://perma.cc/W98N-DA6F>] (last updated Feb. 4, 2019).

158. See Hovenkamp, *supra* note 151, at 708–11.

159. 2010 HORIZONTAL MERGER GUIDELINES, *supra* note 13, § 10.

160. On how efficiency claims are initially taken into account, see Darren S. Tucker, *A Survey of Evidence Leading to Second Requests at the FTC*, 78 ANTITRUST L.J. 591, 601–02 (2013). See also Elizabeth M. Bailey, Gregory K. Leonard, G. Steven Olley & Lawrence Wu, *Merger Screens: Market Share-Based Approaches Versus “Upward Pricing Pressure,”* ANTITRUST SOURCE, Feb. 2010, at 1, 6–7; Serge Moresi, *The Use of Upward Price Pressure Indices in Merger Analysis*, ANTITRUST SOURCE, Feb. 2010, at 1, 2–4.

161. 2010 HORIZONTAL MERGER GUIDELINES, *supra* note 13, § 10.

162. See *FTC v. H.J. Heinz Co.*, 246 F.3d 708, 721–22 (D.C. Cir. 2001). The court explained the burden-shifting framework in the following manner:

First the government must show that the merger would produce a firm controlling an undue percentage share of the relevant market, and [would] result[] in a significant increase in the concentration of firms in that market. Such a showing establishes a presumption that the merger will substantially lessen competition. To rebut the presumption, the defendants must produce evidence that show[s] that the market-share statistics [give] an inaccurate account of the [merger's] probable effects on competition in the relevant market. If the defendant successfully rebuts the presumption [of illegality], the burden of producing additional evidence of anticompetitive effect shifts to the government, and merges with the ultimate burden of persuasion, which remains with the government at all times.

Id. at 715; see also Richard J. Gilbert & Hillary Greene, *Merging Innovation into Antitrust Agency Enforcement of the Clayton Act*, 83 GEO. WASH. L. REV. 1919, 1927 (2015).

163. See Hovenkamp, *Appraising Merger Efficiencies*, *supra* note 151, at 724–26.

welfare standard a price-increasing merger would be tolerated, provided that the efficiency gains exceeded consumer losses from reduced output and higher prices.¹⁶⁴

Virtually any type of productive efficiency can be used to prove the efficiency defense, provided that it is “merger specific”—that is, that the defendants can also show that this particular efficiency could not readily be attained except by the merger.¹⁶⁵ This means that transactional efficiencies count, just as much as pure engineering or other production cost efficiencies. For example, if the merging firms can show that after the merger they can negotiate for supplies in larger volumes and thereby obtain lower prices, that evidence could support a successful efficiency defense. If the particular supply market is competitive, then the only likely effect of the claimed efficiency is resource savings. For example, if two Italian restaurants in a small community should merge and can show that they can purchase tomatoes in larger quantities at a lower price, that would count in favor of the merger. The Italian restaurants serve a local market, which we assume is highly concentrated. By contrast, they purchase tomatoes in a much larger and competitively structured market and certainly do not have the power to suppress the output of tomatoes by reducing the price they are willing to pay. Any lower price results from a reduction in transaction costs that accompany larger scale purchases.

By contrast, when the merging parties have a strong position in the market in which they are purchasing, and the supply market is not as competitive, then this claimed “efficiency defense” may be nothing more than monopsonistic price suppression. In the general run of product markets, the difference between efficient reduction in transaction costs and monopsonistic price suppression is that output increases under the former but decreases under the latter. Further, because monopsony represents an exercise of market power, one must be able to infer that the allegedly monopsonized market is sufficiently noncompetitive to make this exercise plausible.

To take another example, Amazon is a major retailer with a reputation as a hard bargainer for the products that it purchases for resale.¹⁶⁶ It sells automobile tires, which are presumably sold in a national or larger geographic market. Its share of online tire sales is 8%, however,¹⁶⁷ and online tire sales constitute only 6% of the total tire market, indicating that if the market is all tire sales Amazon has perhaps one half of one percent.¹⁶⁸ In that case any lower wholesale price that Amazon is able to obtain for tires is not likely to be monopsonistic, but rather an efficient reduction

164. See, e.g., Oliver E. Williamson, *Economies as an Antitrust Defense: The Welfare Tradeoffs*, 58 AM. ECON. REV. 18 (1968).

165. See 2010 HORIZONTAL MERGER GUIDELINES, *supra* note 13, § 10.

166. On Amazon’s procurement policies, see Adam Robinson, *Top 5 Trends to Know to Compete with Amazon’s Supply Chain*, FRONETICS (Feb. 13, 2017), <https://www.fronetics.com/top-5-trends-know-compete-amazons-supply-chain> [<https://perma.cc/Q6LE-LFBM>].

167. *Amazon Online Retailer Share: Lame or Dominating the Game*, STEVENSON COMPANY: BLOG (Feb. 23, 2017), <https://stevensoncompany.com/amazon-online-retailer-share-lame-dominating-game> [<https://perma.cc/B26G-SU97>].

168. Bob Ulrich, *Your Next Great Competitor Is... the Odds Favor Amazon.com Over Sears Automotive*, MODERN TIRE DEALER (Mar. 17, 2017), <http://www.moderntiredealer.com/article/721519/your-next-great-competitor-is-the-odds-favor-amazon-com-over-sears-automotive> [<https://perma.cc/5SG8-P7EF>].

in purchasing costs. By contrast, Amazon accounts for roughly 83% of the e-book downloads in the United States, with much of the balance shared by Apple (9%) and Barnes & Noble (4%), along with several smaller firms. Those numbers make claims of monopsonistic price suppression more plausible.¹⁶⁹

In the case of labor, resorting to quantity or “bulk” discounts is probably not a feasible efficiency, because each worker sells his or her labor individually. Indeed, employers more typically obtain lower wages by *breaking* unions, thus forcing individual bargaining, rather than entering into collective bargaining with them. One could argue that hiring more people can save companies some human resources costs, but these would show up as administrative costs, not as lower wages or salaries. Furthermore, the empirical evidence does not offer strong support for economics of scale in hiring: in fact, the opposite is often found, with hiring costs increasing rather than decreasing with the number of workers hired.¹⁷⁰

The most plausible efficiency defense would be to argue that an efficient reorganization of production will lead to the firm’s needing fewer workers, i.e. lower labor inputs. Therefore, the firm would be required to demonstrate how the reorganization will lead to the same or greater output with significantly fewer workers. For example, a merger might enable a firm to adopt a labor-saving technology. Alternatively, it may enable the post-merger firm to eliminate costly duplication, particularly in distribution, accounting, or other divisions whose labor could be spread across the entire post-merger firm. This efficiency must be demonstrated for the specific labor market where anticompetitive effects are likely to occur according to the prima facie case. For example, it does not help the company to show that it is saving on the number of accountants needed if the anticipated anticompetitive effects are on the market for nurses.¹⁷¹

The D.C. Circuit’s *Anthem* decision involved a merger among health insurers that the government challenged as anticompetitive in two geographic markets.¹⁷² The defendants, which operated managed care programs, bargained with various physician groups, hospitals, and other health care providers for coverage, which it then priced out to consumers through health care premiums.¹⁷³ The defendants offered to show that, as a consequence of the merger, they would be able to bargain for lower rates from some of the providers.¹⁷⁴ The court majority rejected this

169. Mark Gurman, *Apple’s Getting Back into the E-Books Fight Against Amazon*, BLOOMBERG (6:00 AM EST, Jan. 25, 2018), <https://www.bloomberg.com/news/articles/2018-01-25/apple-is-said-to-ready-revamped-e-books-push-against-amazon> [<https://perma.cc/38NQ-DQBS>].

170. See MANNING, *supra* note 65.

171. On the problem of offsetting harm in one market against benefits in a different market, see *infra* text accompanying notes 180–82.

172. *United States v. Anthem, Inc.*, 855 F.3d 345, 348 (D.C. Cir. 2017); *cf.* *W. Penn Allegheny Health Sys., Inc. v. UPMC*, 627 F.3d 85 (3d Cir. 2010) (sustaining complaint that large hospital system and health insurer conspired to suppress reimbursement rates paid to providers); *N.M. Oncology and Mematology Consultants, Ltd. v. Presbyterian Health Care Serv.*, 54 F. Supp. 3d 1189 (D.N.M. 2014) (sustaining cancer treatment facility’s complaint of conspiracy between hospital and insurer to suppress reimbursement rates).

173. *Anthem*, 855 F.3d at 350.

174. *Id.* at 352.

efficiency defense as inadequately proven.¹⁷⁵ A dissenting judge would have found the proof of efficiencies adequate, but he also acknowledged that the evidence could indicate “monopsony power in the upstream market where Anthem-Cigna negotiates provider rates with hospitals and doctors.”¹⁷⁶ The majority had also agreed that if the lower rates actually reflected an exercise of monopsony power in the merging firms’ supply markets it would not constitute a defense.¹⁷⁷ That position is also reflected in the Merger Guidelines, which refuse to recognize as an efficiency “anticompetitive reductions in output or service.”¹⁷⁸

But in the case of labor market supply, how does one tell the difference between efficient bargaining that reduces costs and monopsonistic reductions in labor supply? Is the ability to obtain a lower rate from providers an “efficiency defense” or merely an exercise in monopsony power? Here, the basic economics of monopsony can be helpful, although perhaps not decisive in every case. If the labor supply market is unconcentrated and the merging firms purchase only a small portion of it, then they probably lack the power to exercise monopsony power in that market. They would be more like the two Italian restaurants in the previous example, who operate locally in the market in which they sell but purchase tomatoes in a very large market.¹⁷⁹ In that case, bargaining for lower rates is very likely efficient. By contrast, if the labor demand market is concentrated and the merging firms account for a high proportion of it, that at least raises the inference that their ability to obtain lower rates results from a reduction in competition for the purchase of labor rather than any bargaining efficiencies. To the extent output is measurable, that evidence can also be helpful: efficient reductions in transaction or bargaining costs will tend to increase output while monopsonistic suppression of wages will tend to reduce it.

There is also the problem of “offsets,” or whether consumer harm in one market can be offset by efficiency gains in a different market. In its *Philadelphia Bank* decision the Supreme Court said no,¹⁸⁰ and that outcome seems consistent with the statutory language which provides that a merger is unlawful if it harms competition in “any” line of commerce and section of the country. Importantly, since the harm and the benefits occur in different markets, we would effectively be asking one set of consumers to pay the price of an anticompetitive merger, while another set would enjoy the efficiency benefits. Further, making quantitative assessments of benefits in one market and harms in a different market would place heroic demands on the courts.¹⁸¹

Adding labor market effects could serve to complicate this analysis. For example, suppose a merger is challenged as anticompetitive in a labor market but the merging firms offer evidence that the merger will lead to reduced costs in the product market in which they sell. Once again, they would be asking the court to tolerate an anticompetitive outcome in one market, labor, for the benefit of a different group

175. *See id.* at 353, 355.

176. *Id.* at 377 (Kavanaugh, J., dissenting).

177. *Id.* at 371.

178. 2010 HORIZONTAL MERGER GUIDELINES, *supra* note 13, §10; *accord* Hemphill & Rose, *supra* note 40.

179. *See supra* text accompanying note 166.

180. *United States v. Philadelphia Nat’l Bank*, 374 U.S. 321, 370–71 (1963).

181. *See Hovenkamp, supra* note 151 at 733–34.

who purchases in the product market. Existing law would not countenance such an approach, nor as a general matter should it.¹⁸²

VIII. MEASURING “CONSUMER WELFARE” EFFECTS IN LABOR MARKETS

The defining attribute of the consumer welfare standard is the elimination of monopoly: eliminating monopoly entails higher output and, in the case of output restraints, lower prices. For example, under the consumer welfare standard, merger law does not recognize an efficiency defense unless the efficiencies are so substantial that they reduce the profit-maximizing price of the post-merger firm to a level that is no higher than the pre-merger level. As a result, it does not accept “tradeoffs” that tolerate increased monopoly power and actual output decreases, provided there are offsetting gains in productive efficiency.¹⁸³ Properly defined, the consumer welfare standard applies in exactly the same way to monopsony. Its goal is high output, which comes from the elimination of monopoly power in the purchasing market.

The monopsony case can sow some confusion, however, because suppressed buying prices are low rather than high. In some cases, an exercise of monopsony power in the labor market will also harm consumers in the product market. This will occur when the post-merger firm has market power on both sides of the market. In that case, exercising market power on the labor side will entail the purchase of less labor. *Ceteris paribus*, less labor will lead to less output on the product side. If the firms have power on that side, the result would be higher product prices as well, and consumer harm is obvious.

The consumer welfare principle also guides cases when the two firms are not competitors at all in the product market. For example, in the hypothetical eBay/Intuit merger discussed above,¹⁸⁴ the acquisition does not reduce competition between the two firms in the product market. However, because the two firms will hire fewer software engineers (or other affected employees), they will very likely produce less in the product market. Assuming the firms have some power in the product markets in which they sell, product prices would go up as well, even though the firms are not product market competitors. The general language of section 7 of the Clayton Act counts this as a qualifying injury to competition, although to date no court of which we are aware has recognized it. That is, even though the merger does not increase concentration in any product market, it does result in a product price increase. In some cases, a merger may lead to a wage decrease without a decrease in output. After a merger, workers may still be willing to work for the merging firm because their next best alternative is worse than working at the lower wage. Hemphill and Rose¹⁸⁵ explain how a merger of buyers (such as employers) can lead to a decrease in

182. One might want to reserve an exception for very small harmful effects in one market, offset by very large benefits in a different market. See Gregory H. Werden, *Cross-Market Balancing of Competitive Effects: What is the Law, and What Should it Be?*, 43 J. CORP. L. 119, 122 (2017).

183. See *supra* text accompanying notes 120–40; see also Steven C. Salop, *Question: What is the Real and Proper Antitrust Welfare Standard? Answer: the True Consumer Welfare Standard*, 22 LOY. CONSUMER L. REV. 336 (2010).

184. See *supra* text accompanying notes 131–34.

185. Hemphill & Rose, *supra* note 40, at 2093–94.

bargaining leverage for sellers (such as workers), without necessarily entailing a decrease in output. In this case, there is merely a transfer away from workers and towards the merging firms. Yet, they argue that such a transfer is a harm for antitrust law as it results from a reduction in competition.¹⁸⁶ Thus, they argue that antitrust law should protect the welfare of the merging firms' trading partners, be they consumers, workers, or other suppliers.¹⁸⁷

In sum, when consumer welfare is properly defined as targeting monopolistic restrictions on output, it is well suited to address anticompetitive consequences on both the selling and the buying side of markets, and those that affect labor as well as the ones that affect products. In cases where output does not decrease, the anticompetitive harm to trading partners can also be invoked.

CONCLUSION

Horizontal mergers threatening labor market competition present a significant competition problem and several legal issues that have not previously been explored. Labor market concentration—measured by the HHI for employers recruiting in a given labor market—seems to be very high, as high or higher overall than product market concentration. This suggests that a mature policy of pursuing mergers because of harmful effects in labor markets could yield many cases, although *prima facie* we do not know how many. Also significant is that some of these mergers might be horizontal in the labor market but not in the product market in which the merging firms sell their goods or services. Once again, we do not predict the extent to which this is true, but it does suggest that those reviewing mergers cannot simply assume that lack of competition in the product market entails the same for the labor market. So to say that merger analysis focusing on labor will take evaluators into uncharted territory seems clear, and perhaps even more so for courts.

At the same time, however, we are not recommending any significant changes in the economic analysis applied to mergers. The mechanisms of market definition, measurement of concentration, the construction of *prima facie* cases based on concentration effects, and assessments of consumer welfare, can readily be adapted to merger cases involving labor markets. The fundamentals remain the same.

186. *See id.* at 2104–05.

187. *See id.* at 2091–92.