

Horizontal Collusion and Parallel Wage Setting in Labor Markets

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Horizontal collusion among employers to suppress wages has received almost no attention in the academic literature, in contrast with its more familiar cousin, product-market collusion. The similar economic analysis of labor and product markets might suggest that antitrust should regulate labor and product markets in the same way. But product markets and labor markets do not operate identically: people behave differently as employees and as consumers. Unlike consumers who can switch products relatively easily, employees face significant frictions in changing jobs. Other labor market frictions are created by the pay equity norm and downward nominal wage rigidity. These and related factors stabilize collusive arrangements and facilitate tacit coordination in labor markets. The implications for antitrust law are explored.

INTRODUCTION

In the last few years, academics and policymakers have turned their attention to the role of antitrust law in countering labor monopsony. This work was stimulated by a series of papers written by labor economists that documents the high level of concentration in many labor markets and offers evidence that labor market concentration results in lower wages (as theory would predict).¹ Other work has found that employers frequently use

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¹ See, e.g., José Azar, Ioana Marinescu & Marshall Steinbaum, *Labor Market Concentration*, 57 J. HUM. RES. S167, S179, S186 (2022); Efraim Benmelech, Nittai K. Bergman & Hyunseob Kim, *Strong Employers and Weak Employees: How Does Employer*

anticompetitive terms in contracts affecting labor markets, including covenants not to compete and no-poaching agreements.² Yet antitrust claims against employers for labor market abuses are exceedingly rare. Law professors and economists have begun to explore why this is the case, and what (if anything) can (or should) be done about it.³ Policymakers and lawyers in the White House, Congress, the Federal Trade Commission (FTC), the Department of Justice (DOJ), and state attorney general offices have been considering reforms to antitrust law or new ways to enforce it. Both the FTC and the DOJ have begun to execute new enforcement priorities oriented to anticompetitive labor market abuses.⁴

The academic literature has focused so far on mergers, with some attention to no-poaching agreements, but it has not addressed major forms of collusion that are the bread and butter of antitrust law. We try to fill this gap by bringing the literature on (horizontal) collusion and oligopoly in product markets to bear on the special features of labor markets. We argue that while the rules of antitrust law are symmetrical in the sense that they apply to all markets, special features of the labor market suggest

Concentration Affect Wages?, 57 J. HUM. RES. S200, S214 (Supp. 2022); Kevin Rinz, *Labor Market Concentration, Earnings, and Inequality*, 57 J. HUM. RES. S251, S266 (Supp. 2022); Elana Prager & Matt Schmitt, *Employer Consolidation and Wages: Evidence from Hospitals*, 111 AM. ECON. REV. 397, 406 (2021). For some recent reflections on this literature and its implications for antitrust, see generally David Card, *Who Set Your Wage?*, 112 AM. ECON. REV. 1075 (2022).

² Evan P. Starr, J.J. Prescott & Norman D. Bishara, *Noncompete Agreements in the U.S. Labor Force*, 64 J.L. & ECON. 53, 60 (2021); Alan B. Krueger & Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, 57 J. HUM. RES. S324, S327 (Supp. 2022). See also generally Stephen Meisenbacher & Peter Norlander, *A Method for Transforming Unstructured Text to Data with Application to Suspected Employer Collusion* (2022) (unpublished manuscript) (on file with authors) (using machine learning techniques to build a database of no-poach agreements in employment contracts).

³ Herbert Hovenkamp, *Worker Welfare and Antitrust*, 90 U. CHI. L. REV. 511, 527–33 (2023); Laura Alexander & Steven C. Salop, *Antitrust Worker Protections: Rejecting Multi-Market Balancing as a Justification for Anticompetitive Harms to Workers*, 90 U. CHI. L. REV. 273, 286–88 (2023); ERIC A. POSNER, HOW ANTITRUST FAILED WORKERS, 32–33, 34–41 (2021); Ioana Marinescu & Herbert Hovenkamp, *Anticompetitive Mergers in Labor Markets*, 94 IND. L.J. 1031, 1033–34, 1037–40 (2019); Ioana Marinescu & Eric A. Posner, *Why Has Antitrust Law Failed Workers?*, 105 CORNELL L. REV. 1343, 1375–82 (2020); Suresh Naidu, Eric A. Posner & Glen Weyl, *Antitrust Remedies for Labor Market Power*, 132 HARV. L. REV. 536, 570–71, 595–600 (2018).

⁴ U.S. Dep't of Just. & Fed. Trade Comm'n, *Antitrust Guidance for Human Resource Professionals 4* (Oct. 2016), <https://perma.cc/EFG3-2W4U>; Press Release, Office of Pub. Affairs, U.S. Dep't of Just., *Justice Department and Federal Trade Commission Release Guidance for Human Resource Professionals on How Antitrust Law Applies to Employee Hiring and Compensation* (Oct. 20, 2016), <https://perma.cc/7E8C-LFEY>.

that collusive wage agreements—both explicit and tacit—are likely to be more durable and cause greater harm than collusive agreements to fix prices. Accordingly, collusive wage-setting agreements deserve more aggressive scrutiny from courts and antitrust regulators than similar price-setting agreements, and far greater scrutiny than they are currently receiving.

In making this argument, we begin with the premise that the status quo approach to coordination in product markets is correct. Under the status quo, firms are permitted to tacitly coordinate prices and other product features—they can watch and imitate each other's pricing and other practices. Firms are prohibited from explicitly colluding (which is to say, using communication) to fix prices, quantities, or other aspects of production and distribution. But even for explicit collusion, courts have set a high pleading standard for plaintiffs. In order to survive a motion to dismiss and reach discovery, a plaintiff must demonstrate some evidence of both parallel pricing (or other suspicious behavioral patterns consistent with cooperation) and indicia of an explicit agreement. The courts' skepticism appears to reflect the assumption that cartels are inherently unstable. Cartels are believed to be hard to form and even harder to sustain. Accordingly, the conventional wisdom is that plaintiffs should be forced to meet a high burden in order to get discovery in collusion cases. We are, in fact, not sure whether the conventional wisdom is correct, but we have nothing to add to this debate and prefer to begin with a premise that is widely accepted.

We then argue that even if the conventional wisdom is correct, the courts should not be similarly reluctant to hold employers liable for tacit coordination in labor markets. Courts should both relax the pleading standard for allegations of collusive wage-setting (no-poaching, and so on) and treat parallel wage-setting and related forms of tacit coordination as illegal. The reason is that labor markets are different from product markets in several key respects. Employees face higher switching costs than consumers do, in part because employers exercise greater control over workers than do sellers over consumers. Labor markets are also characterized by pay equity norms and downward nominal wage rigidity, neither of which has a parallel in product markets. These and related factors facilitate collusion in labor markets but not in product markets.

I. TACIT AND EXPLICIT COLLUSION IN LABOR MARKETS

The logic of collusion applies when a small number of firms enjoy market power in labor markets—also known as oligopsony or labor oligopsony. Instead of holding prices above the competitive rate, employers pay wages below the competitive rate and maintain those wages by threatening to match or exceed any wage raises by another employer. The threat suppresses wages by eliminating any advantage to a firm from raising wages. If one firm raises wages in an attempt to acquire a competitive advantage in the market for employees, the advantage disappears once its competitors match the higher rates.⁵ An equilibrium with below-market wages is possible even in the absence of communication or agreement as long as each of the two firms can observe or learn the wages paid by the other and adjust its own wage schedule in response to any deviation. This is known as parallelism or tacit coordination. Such an equilibrium is likely easier to reach and sustain if the firms communicate and agree so that they can jointly adjust to external shocks (explicit collusion).⁶

While we will focus on collusive wage setting, collusion takes as many different forms in labor markets as it does in product markets.⁷ In product markets, sellers can collude over quantity or output; similarly, employers can agree to limit the number of people they employ. In product markets, sellers can allocate markets by, for example, agreeing not to poach one another's customers or dividing up the geographic areas in which they operate. In labor markets, employers can agree not to poach each other's employees or agree to hire workers from particular geographic areas. As we will see, no-poaching agreements appear to be more common in labor markets than in product markets, while quantity limits seem to be more common in product markets than in labor markets. Price- and wage-setting agreements exist in both types of market.

Explicit collusion has long been illegal under antitrust law, though as we noted the barriers are high to plaintiffs seeking redress. On the other hand, tacit coordination in price setting—that is, parallel pricing—is legal, though there has been an extensive

⁵ POSNER, *supra* note 3, at 17–18 (2021).

⁶ See Margaret C. Levenstein & Valerie Y. Suslow, *Breaking Up Is Hard to Do: Determinants of Cartel Duration*, 54 J.L. & ECON. 455, 482 (2011).

⁷ For a survey of the literature on collusion in product markets, see John Asker & Volker Nocke, *Collusion, Mergers, and Related Antitrust Issues* 16–24 (Nat'l Bureau of Econ. Rsch., Working Paper No. 29175, 2021).

debate over the practice. As we will draw on that literature's insights, we briefly describe it here.

The literature began with an article by Professor Donald Turner, published in 1962.⁸ Turner observed that in an oligopoly, firms have an incentive to price "interdependent[ly]," meaning that firms do better if they set prices above the competitive level and can do so as long as they adopt a strategy of charging the same price and not undercutting each other. This meant that firms could charge a supracompetitive price without entering a formal (oral or written) agreement or communicating at all.

Imagine a duopoly in which each firm sets a price above the market rate and adopts a policy of maintaining that price as long as the competitor matches the price. If one firm cuts the price, the other firm will match or exceed the price cut, resulting in a decline in profits for both firms. To avoid this adverse outcome, each firm may avoid price cuts in the first place. Under general conditions, an equilibrium exists in which both firms maintain the supracompetitive price. This equilibrium can exist in the absence of any formal agreement or any communication whatsoever as long as the two firms can observe each other's prices, adjust their own prices rapidly, and care sufficiently about future profits.⁹

But while this might seem to suggest that antitrust law should penalize what is now usually called "tacit coordination" or "parallel pricing," Turner argued that this would be unwise.¹⁰ When firms set prices, they unavoidably are aware of the prices set by competitors, and it is hard to imagine how firms could ignore their competitors' behavior. In theory, courts could penalize any firm in an oligopoly that set the same prices as other firms, but this approach would also penalize innocent firms that set identical prices because they incurred identical costs. A better approach would be a requirement that firms set prices by independently adding a markup to their costs, but such a remedy would be little different from price regulation, which courts (and, indeed, as time would show, regulators) are not well positioned to accomplish.

⁸ Donald F. Turner, *The Definition of Agreement Under the Sherman Act: Conscious Parallelism and Refusals to Deal*, 75 HARV. L. REV. 655, 658–62 (1962).

⁹ For a review of the theory, see LOUIS KAPLOW, *COMPETITION POLICY AND PRICE FIXING* 174–214 (2013).

¹⁰ Turner, *supra* note 8, at 673.

Turner's argument was challenged in a 1969 article by then-Professor Richard Posner,¹¹ whose position was further developed by Professor Louis Kaplow in a book published in 2013.¹² On their view, there is no reason in antitrust theory or policy to distinguish between an oligopoly that maintains supracompetitive prices through communication and agreement and an oligopoly that maintains supracompetitive prices through parallel behavior. Both types of behavior are equally bad, and indeed it is not even clear that there is any difference between them. Parallel behavior, in which one firm might initiate price changes and a second firm imitate them, is a kind of agreement where communication takes place through actions rather than words. The distinction between tacit coordination and nonverbal agreement is exceedingly elusive; in simple game-theoretic models of repeated interaction, an equilibrium in which the firms charge above supracompetitive prices can be characterized in either way. Both authors argued that courts should therefore impose sanctions on tacit coordination by oligopolists.¹³

The courts have sided with Turner, but the debate was important because it sharpened the law's understanding of the dangers of collusion in oligopolistic market and helped justify legal precautions against market concentration, for example, through merger policy.¹⁴ The debate and its impact on the law also focused attention on the sustainability of (explicit) collusion, which can be traced back to an article written by economist George Stigler in 1964, and was greatly refined by the game theory literature of the 1970s and 1980s.¹⁵ As is by now familiar, collusion becomes more likely when, among other things, a smaller rather than larger number of firms compete in the market, the commodity is homogeneous, and competitors can easily observe one another's pricing and related actions.¹⁶ Stigler also observed that a cartel might fix prices for small customers while competing over large

¹¹ Richard A. Posner, *Oligopoly and the Antitrust Laws: A Suggested Approach*, 21 STAN. L. REV. 1562, 1566–75 (1969).

¹² KAPLOW, *supra* note 9.

¹³ Posner, however, later repudiated his position in a review of Kaplow's book. See Richard A. Posner, *Review of Kaplow*, Competition Policy and Price Fixing, 79 ANTITRUST L.J. 761, 763 (2014) (book review).

¹⁴ U.S. Dep't of Just. & Fed. Trade Comm'n, *Horizontal Merger Guidelines*, 25–27 (Aug. 19, 2010), <https://perma.cc/2X2S-4965>.

¹⁵ See generally George J. Stigler, *A Theory of Oligopoly*, 72 J. POL. ECON. 44 (1964).

¹⁶ *Id.*

customers.¹⁷ We will discuss some of the other findings of this literature below. For law, these factors have become important for plaintiffs alleging explicit collusion who seek to avoid a motion to dismiss under the *Twombly* standard.¹⁸ Courts require a showing of parallelism “plus” allegations of an agreement or other factors suggestive of or conducive to an agreement.¹⁹

At a high level of abstraction, labor markets are similar to product and other types of markets. The laws of supply and demand hold sway in all markets. But at the lower level of generality at which antitrust law operates, the markets are quite different. Labor markets are characterized by a high degree of friction: interactions are dense, continuous, usually lengthy, complex, and characterized by a high degree of investment by the employee in firm-specific human capital. Bargaining power is almost always asymmetric: exit is more costly for the employee than for the employer.²⁰ Product markets are far simpler. Transactions are usually discrete and simple, buyers and sellers might interact only once, and no one invests in the relationship.²¹ Except when markets are concentrated, bargaining power is symmetric. There are, of course, more complex product markets where relationships are formed (leases, credit cards, bank accounts, insurance policies, software licensing agreements, platforms, and so on).²² And there are markets in which sellers provide labor in relatively discrete bursts (and where they are therefore classified as independent contractors rather than employees).²³ But the differences between product markets and labor markets are large and systematic enough to have resulted in separate branches of economics (labor economics and industrial organization) and a separate legal system for labor markets (labor and employment law).

As we turn to antitrust, we ask whether the distinctive features of labor markets call for a different kind of antitrust law. Below, we focus on five such features: (1) employees face higher

¹⁷ *Id.* at 47.

¹⁸ *Bell Atlantic Corp. v. Twombly*, 550 U.S. 544, 548–49 (2007).

¹⁹ John E. Lopatka, *Solving the Oligopoly Problem: Turner’s Try*, 41 ANTITRUST BULL. 843, 897–98 (1996).

²⁰ Eric A. Posner, *The Economic Basis of the Independent Contractor/Employee Distinction*, 100 TEX. L. REV. 353, 367 (2021).

²¹ POSNER, *supra* note 3, at 51–54.

²² Joseph Farrell & Paul Klemperer, *Coordination and Lock-In: Competition with Switching Costs and Network Effects*, in 3 HANDBOOK OF INDUSTRIAL ORGANIZATION 1967, 1977–79 (M. Armstrong & R. Porter eds., 2007).

²³ Posner, *supra* note 20, at 353–54.

switching costs than consumers do, in part because employers exercise greater control over workers than do sellers over consumers; (2) labor markets are characterized by a pay equity norm that has no parallel in product markets; (3) labor markets are characterized by downward nominal wage rigidity, which also has no parallel in product markets; (4) there are no large sellers of labor the way there can be large suppliers of products or services; and (5) consumer prices are usually more transparent than wages. We choose these features because they are well established in the literature and are relevant to antitrust issues. The DOJ and FTC's Horizontal Merger Guidelines discuss analogous factors at length, though in the context of product rather than labor markets.²⁴ However, they do not exhaust the differences between labor and product markets, nor do they take account of the extreme variation in the characteristics of specific markets within those broad categories. For this reason, our discussion should be regarded as preliminary and exploratory.

Our tentative hypothesis is that these features facilitate labor market collusion and/or parallelism, suggesting that competition is softer in labor markets than in product markets. Because it is harder for an employer to lure away the employee of a competitor than for a seller to lure away the customer of a competitor, employers may be able to sustain collusion more effectively than sellers can. But a number of complexities need to be resolved before one can reach a firm conclusion.

A. High Switching Costs

Traditional models of oligopoly assume that consumers will buy from whichever seller offers a lower price—that is, “switching costs” are low, which means the price elasticity of demand is high. Most sellers interact with customers only on occasion, at the time of sale; as a result, they can compete only by offering better prices, better quality, or superior advertising. If two firms agree to fix prices, then each firm has an incentive to cheat by cutting prices because it will be able to lure away its competitor's customers. The additional sales made by the firm that cuts prices will compensate for the loss of revenue per sale. Symmetrical incentives to cheat may therefore undercut the arrangement, even deterring the firms from colluding in the first place. Parallel pricing and other forms of tacit coordination may be difficult to sustain for the

²⁴ U.S. Dep't of Just. & Fed. Trade Comm'n, *supra* note 14, at 25–27.

same reason. So while experience teaches that collusion and parallel prices remain common despite these incentives, some courts and scholars are skeptical about the likelihood that parallel pricing will arise or the duration over which it can persist.²⁵

In labor markets, by contrast, switching costs are high. In one striking example, researchers found that for the Amazon Mechanical Turk labor market, which at first glance appears quite thick, the elasticities for recruitment were 0.05–0.11 and for retention were 0.1–0.5.²⁶ Elasticity in this context refers to the sensitivity of the supply of labor to the wage that workers receive. An elasticity of 0.1 means that if wages fall by 10%, recruitment will decline by only 1% or only 1% of workers will quit. By contrast, in a competitive market (where elasticity is technically infinity), even a slight decline in the wage would cause many workers to refuse to take a job or to quit. (For example, in a relatively competitive labor market where elasticity is, say, 10, a 1% decline in the wage would result in a 10% decline in labor supply.) The authors attribute the low elasticities to the differentiated nature of tasks, which may have appealed to different workers to different degrees, and search costs.²⁷ This is notable given that Amazon Mechanical Turk is built for ease of search among jobs. A growing literature on more conventional labor markets has also found quite low elasticities, ranging from 2.5 to 5.8.²⁸

There are several reasons why switching costs are generally higher for workers than for consumers. First, search costs for workers are high. Because employment relationships are more complex than products, workers must devote significant time to finding alternative jobs while at the same time being constrained by their time commitments to their existing jobs.²⁹

²⁵ Robert H. Bork, *THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF*, 181 (1978). For judicial examples, see *In re Text Messaging Antitrust Litigation*, 782 F.3d 867, 879 (7th Cir. 2015), *Williamson Oil Co. v. Philip Morris USA*, 346 F.3d 1287, 1300–01 (11th Cir. 2003), and *Theatre Enterprises. v. Paramount Film Distribution Corp.*, 346 U.S. 537, 540–41 (1954).

²⁶ Arindrajit Dube, Jeff Jacobs, Suresh Naidu & Siddharth Suri, *Monopsony in Online Labor Markets*, 2 *AM. ECON. REV.: INSIGHTS* 33, 41, 43 (2020).

²⁷ *Id.* at 45.

²⁸ See Anna Sokolova & Todd Sorensen, *Monopsony in Labor Markets: A Meta-Analysis*, 74 *ILR REV.* 27, 34 (2021); Ihsaan Bassier, Andrajit Dube & Suresh Naidu, *Monopsony in Movers: The Elasticity of Labor Supply to Firm Wage Policies* 46–50 (Nat'l Bureau of Econ. Rsch., Working Paper No. 27755, 2020); José Azar, Steven Berry & Ioana Marinescu, *Estimating Labor Market Power*, 25–26 (2022) (unpublished manuscript) (on file with authors).

²⁹ POSNER, *supra* note 3, 14–15.

Second, job differentiation is often high, and more complex and subtle than product differentiation. Similar-seeming occupations actually differ because employers are located in different places (affecting commuting times),³⁰ specialize in different types of work, employ different workforces (affecting interpersonal relationships), and cater to their workers by offering conditions and amenities that are specific to the often-idiosyncratic preferences of the incumbent workforce.³¹ By contrast, many goods and even services are interchangeable in a way that is much rarer in labor markets where workers are employed.³²

Third, employers exercise daily control of their workers, usually over a long period of time. As a result, employers obtain significant information about workers' preferences, backgrounds, and productivity. Workers also compose a captive audience, defenseless against the employers' elaborate campaigns to instill loyalty to the company and solidarity with other workers. A firm's information advantage over competitors is much greater for workers than for customers. Employees spend eight hours a day with the employer and zero hours with competitors, while customers may spend a few minutes or hours a year with a typical seller and may also buy from competing sellers in the same period.

Fourth, because employers are more likely to let go of poor workers than good workers, an adverse selection problem may hamper efforts by workers to find new jobs with competitors, who will fear that the incumbent employer let them leave because it knew that those workers had low ability.³³

Finally, workers typically invest time and effort to learn the idiosyncratic or firm-specific characteristics of their employer. As a result, while their employer will value them more than other workers, competing employers will not be willing to pay them as much as the incumbent employer. That means that the worker

³⁰ See Sydnee Caldwell & Oren Danieli, *Outside Options in the Labor Market* 26–27 (Working Paper 2022) (finding that the implicit costs of commuting and moving are the primary determinant of an individual's outside job options).

³¹ See Nina Roussille & Benjamin Scuderi, *Bidding for Talent: Equilibrium Wage Dispersion on a High-Wage Online Job Board* 36–37 (Working Paper 2022) (finding that employees are willing to accept substantially discounted wages in exchange for firm-provided amenities, and that this willingness leads to imperfectly competitive labor markets).

³² Workers who serve as independent contractors *are* (more) interchangeable, and that is why they are not classified as employees and deprived of the labor exemption in antitrust law. See Posner, *supra* note 20, at 368.

³³ Daron Acemoglu & Jörn-Steffen Pischke, *Why Do Firms Train? Theory and Evidence*, 113 Q.J. ECON. 79, 80–81 (1998).

loses a credible threat to quit if the employer pays below the competitive rate. More broadly, switching from one job to another can be cumbersome, risky, and fraught, and many people switch jobs only a few times over the course of their life.³⁴

While high switching costs are more common in labor markets than in product markets, there are some product markets in which information costs, brand loyalty, and other frictions keep switching costs well above zero.³⁵ One of the earliest papers on switching costs, by Professor Paul Klemperer, divides the sources of switching costs into transaction costs, learning costs, and contractual or artificial costs.³⁶ For example, switching among banks requires a consumer to close one account, open another, and transfer funds; to learn about the differences among the bank offerings; and possibly to lose benefits reserved for long-term customers (a more familiar example is frequent flyer miles).³⁷ For platforms, switching costs can be high because of network effects. For labor, switching among employers involves the transaction costs of quitting, applying, and being hired; researching positions, interviewing, possibly retraining, and possibly moving residences; and losing unvested pensions, credit toward promotions, and (where noncompetes are used) opportunities to work for competitors. With the possible exception of some extremely dominant product-market platforms, switching costs in labor markets seem far higher and more common across different types of markets.³⁸

³⁴ Raven Molloy, Christopher Smith & Abigail K. Wozniak, *Changing Stability in U.S. Employment Relationships: A Tale of Two Tails*, 3 (Nat'l Bureau of Econ. Rsch., Working Paper No. 26694, 2020).

³⁵ Farrell & Klemperer, *supra* note 22, at 1980–81. For a recent discussion of the more general problem of customers who do not shop around, see generally Walter Beckert and Paulo Siciliani, *Protecting Sticky Consumers in Essential Markets*. 61 REV. INDUS. ORG. 247 (2022). Some of Beckert and Siciliani's warnings against rules to protect "naïve" customers who do not shop around—for example, price-parity rules that may reduce competition—may apply to corresponding labor market rules as well.

³⁶ Paul Klemperer, *Markets with Consumer Switching Costs*, 102 Q.J. ECON. 375, 375–76 (1987).

³⁷ *Id.* at 378–80.

³⁸ Labor market platforms, like Uber and Amazon Mechanical Turk, raise further complications. On the one hand, they free workers from conventional employers (as workers work directly for consumers with whom they are matched); on the other, platforms often lock workers into the platform, see Sydnee Caldwell & Emily Oehlsen, *Monopsony and the Gender Wage Gap: Experimental Evidence from the Gig Economy* 12–13 (Mass. Inst. of Tech., Working Paper 2018), which would not normally be considered an employer of the worker under current law. The platform owner may seek to maximize output because it takes a cut on each transaction; but, depending on market structure, it may have an incentive to favor consumers at the expense of workers (or vice versa).

In the oligopoly literature, sellers can “capture” buyers by instilling brand loyalty through advertising campaigns or investments in quality. In the simplest model, the result is that the sellers compete (or collude) over only the noncaptive buyers.³⁹ In more complex models, they must manipulate price and quality offerings so as to maximize profits from loyal buyers while also attracting (or not attracting, where collusion occurs) the noncaptive buyers.⁴⁰ One could think of employers’ incentives in a similar way. But because it is cheaper for an employer to instill loyalty in workers because of its natural advantages, more workers will be captive.

Because switching costs are higher in labor markets than in product markets, there is reason to believe that both explicit collusion and tacit coordination are more likely to succeed in labor markets. Firms compete by poaching each other’s consumers and workers. Because switching costs are low for consumers, a firm can lure them from a competitor by offering a slightly lower price or slightly improved quality. Advertising campaigns will be effective because consumers who learn about the advantages of a competitive brand can easily switch to it. This prospect of easily increasing market share will offer a constant temptation to cheat on collusive agreements or deviate from parallel behavior. This makes collusive agreements in product markets less likely to arise in the first place and less likely to persist when they do arise.⁴¹

By contrast, a firm that seeks to poach workers from a competitor will be required to overcome the high switching costs of the competitor’s workforce. Large rather than small wage increases will be required. Advertising will be pointless when switching costs are high. With the incentive to poach lower for labor markets, the risk that one’s counterparty will cheat on explicit agreements or tacit coordination diminishes relative to the product market case.⁴²

The story is not quite this simple, however. One reason is that when switching costs are high, firms may compete “for the market” rather than in the market.⁴³ For example, at the initial stage of platform competition, firms may offer extremely low (including

³⁹ Barry Nalebuff, *Exclusionary Bundling*, 50 ANTITRUST BULL. 321, 323–24 (2005).

⁴⁰ *Id.* at 328–30.

⁴¹ Levenstein & Suslow, *supra* note 6, at 482.

⁴² Farrell & Klemperer, *supra* note 22, at 2002.

⁴³ *Id.* at 1976.

negative) prices in order to win the platform competition because the platform will give them a monopoly enabling them to raise prices *ex post*. With exceedingly forward-looking consumers, it is possible that monopoly profits will be zero. The literature, however, has not reached a consensus on this argument, which seems implausible to many economists (and to us).⁴⁴ The argument is even less plausible for labor markets. In labor markets, it is familiar that employers frequently compete vigorously for college or professional-school graduates, as illustrated by job fairs, recruitment campaigns, and cushy summer internships, but they much more rarely compete for already-employed workers. Given myopia, the nonverifiability of work-related factors like productivity, and the sheer complexity of the future, job applicants do not have a practical way to ensure that employers will keep wages and benefits high after they have become trapped in their jobs. Professionals are wined and dined when they are recruited, not after they are hired.

Another, stronger, reason that switching costs will not necessarily lead to greater collusion is that while high switching costs make it harder for firms to cheat, they also reduce the incentive to collude in the first place—because firms compete less vigorously when switching costs are high. On this view, switching costs facilitate parallel behavior, but since parallel behavior is facilitated, explicit collusion is less necessary.

High switching costs also make it harder for firms to retaliate against cheaters. In the repeat-game model, an employer declines to increase wages and poach its competitors' best employees because it expects that if it does so, its competitors will match the wage increase and poach its own workers in response. But if switching costs are high, retaliation becomes difficult.⁴⁵ The employees of the firm being retaliated against are themselves less likely to switch jobs. The Horizontal Merger Guidelines reflect this ambiguity. Those Guidelines note that a "market is more apt to be vulnerable to coordinated conduct if the firm initiating a price increase will lose relatively few customers after rivals respond to the increase"—that is, if switching costs are high.⁴⁶ Yet the same section of the Guidelines also notes that a market is more vulnerable to coordination if rivals can more easily punish a firm for attempting to cheat, and punishment is easier "if

⁴⁴ *Id.* at 2052.

⁴⁵ *Id.* at 1990.

⁴⁶ U.S. Dep't of Just. & Fed. Trade Comm'n, *supra* note 14, at 26.

customers find it relatively easy to switch between suppliers”—that is, if switching costs are low.⁴⁷

Overall, the literature indicates that the effect of switching costs on incentives to collude is complex. We suggest, at a minimum, that the risk that high switching costs increase parallelism and explicit collusion is great enough to warrant special attention to collusion in labor markets. But from a practical and legal perspective, there is no substitute for case-by-case analysis of specific markets and employers' behavior within them.

B. Pay Equity Norm

Traditional models of oligopoly assume that consumers rationally buy goods and services so as to maximize their utility. Except in unusual circumstances, their purchasing decisions are not affected by the prices paid by other consumers. While common experience tells us that people are sometimes annoyed when they learn that they paid a seller more for a product than other buyers did, this phenomenon does not appear to affect consumer behavior in a significant way. This means that sellers are mostly free to engage in price discrimination—they can charge higher prices to consumers with higher willingness to pay as long as they can prevent arbitrage among consumers or other intermediaries who would buy at the low prices and resell at higher prices.

By contrast, in labor markets, the pay equity norm often prevails. In many industries, employees become angry if they learn that colleagues are paid more for the same work than they are. In a well-known study, economists exploited a change in state law that resulted in disclosure of salaries of staff in the University of California system.⁴⁸ They randomly informed employees of the website that disclosed the salaries, and then learned via a survey that employees whose salary was below the median reported lower job satisfaction while those above the median were not affected by the information.⁴⁹ In some instances, a pay equity norm may be strengthened by employment discrimination law. For instance, in a recent Ninth Circuit case, when a firm recruited a new male employee by offering him a higher wage, the court held

⁴⁷ *Id.*

⁴⁸ David Card, Alexandre Mas, Enrico Moretti & Emmanuel Saez, *Inequality at Work: The Effect of Peer Salaries on Job Satisfaction*, 102 AM. ECON. REV. 2981 (2012); see Emily Breza, Supreet Kaur & Yogita Shamdasani, *The Morale Effects of Pay Inequality*, 113 Q.J. ECON. 611, 653 (2018).

⁴⁹ Card et al., *supra* note 48, at 2994.

that the Equal Pay Act⁵⁰ required the firm to offer a matching raise to an existing female employee.⁵¹

Where it exists, a pay equity norm makes it costlier for employers to cheat on horizontal arrangements, relative to sellers. Suppose a seller in a collusive agreement tries to increase market share without losing money on inframarginal customers by offering secret discounts to new customers. It is possible that other sellers will notice, causing the cartel to collapse.⁵² But the seller is unlikely to be punished by its incumbent customers, who might be annoyed if they find out but will rationally keep buying. On the other hand, if an employer offers wage premiums to new hires, it takes the risk that incumbent workers will become angry and quit or demand higher pay. Employers can sometimes evade the pay equity norm by offering bonuses to new hires, but this is not always possible, and a one-time bonus may be less alluring than a higher salary that will predictably advance with annual cost of living increases. Accordingly, the incentives for employers to cheat on horizontal arrangements are lower than they are for sellers.

There are, however, possible offsetting effects in both markets. If one seller threatens to steal customers by offering discounts, other sellers can respond by offering discounts to just those same customers. Employers, by contrast, are constrained from offering higher salaries only to employees who threaten to leave. If the pay equity norm is to be respected, the employer who raises salaries for some marginal employees will be required to raise salaries for inframarginal employees as well, at great cost. The pay equity norm thus makes it costlier for employers to poach workers than it is for sellers to poach customers, but also costlier for employers to defend against the poaching of their own workers than it is for sellers to defend against the poaching of their customers.

It might seem that these effects would offset each other, or that the pay equity norm would have an ambiguous effect on the

⁵⁰ Pub L. No. 88-38, 77 Stat. 56 (codified in scattered sections of 29 U.S.C.).

⁵¹ *Rizo v. Yovino*, 950 F.3d 1217, 1229 (9th Cir. 2020). We thank Aneil Kovvali for pointing us to this case.

⁵² Kenneth S. Corts, *Third-Degree Price Discrimination in Oligopoly: All-Out Competition and Strategic Commitment*, 29 RAND J. ECON. 306, 308–09 (1998). The pay equity norm enables the employer to commit to a wage; by contrast, it is the (usual) inability of sellers to commit to a price that can lead to the collapse of a cartel via price discrimination. See Lars A. Stole, *Price Discrimination and Competition*, in 3 HANDBOOK OF INDUSTRIAL ORGANIZATION 2247 (Mark Armstrong & Robert H. Porter eds., 2007).

stability of horizontal collusion. But we think that this is not correct. The main difference is one of stakes, and hence risk. A seller can try to poach a rival's customers by offering small discounts; if the rival retaliates, the seller can quickly retreat, reestablishing the equilibrium, with only minor harm to each side. An employer can try to poach a rival's workers only with large bonuses; if the rival retaliates, the two parties can reestablish an equilibrium, but only after paying out large amounts of money. And as we will see below, there are reasons to believe that other features of the labor market will further widen the gap between the risk of worker poaching and the risk of customer poaching.⁵³

C. Downward Nominal Wage Rigidity

In product markets, sellers can normally raise or lower prices as market conditions dictate, enabling them to respond rapidly not only to changes in costs and in demand but to the pricing decisions of their competitors. In labor markets, employers can always raise wages but cannot easily lower them. Employees tend to psychologically anchor on their current wage and strongly object to any reduction in that nominal wage, irrespective of broader market conditions. This is known as downward nominal wage rigidity, and it is a feature of many labor markets.⁵⁴ In periods of low inflation, this means that employers cannot lower real wages either; in periods of high inflation, employers can allow inflation to erode wages, but this is a clumsy way to reduce real wages. While price rigidity also exists in some product markets, wage rigidity is more common and significant.⁵⁵

Downward nominal wage rigidity should strengthen the incentives of employers to collude, relative to those of sellers of products. If an employer cheats by raising wages, then it is hard

⁵³ Separately, if the pay equity norm interferes with discriminatory wage setting, then monopsony in labor markets is more socially costly than monopoly in product markets, all else equal, where price discrimination is common and reduces the social cost of monopoly. See, e.g., Zoe B. Cullen & Bobak Pakzad-Hurson, *Equilibrium Effects of Pay Transparency*, 11–14, 26–27 (Nat'l Bureau of Econ. Rsch, Working Paper No. 28903, 2021).

⁵⁴ David E. Lebow, Raven E. Saks & Beth Anne Wilson, *Downward Nominal Wage Rigidity: Evidence from the Employment Cost Index*, 3 *ADVANCES IN MACROECON.*, no. 1, art. 2, 2003, at 10–13.

⁵⁵ On wage rigidity, see, for example, *id.* at 11–13. Prices are also sometimes “sticky,” but not as sticky as wages. See Daniel Hosken & David Reiffen, *Patterns of Retail Price Variation*, 35 *RAND J. ECON.* 128, 132–33 (2004) (noting that temporary price discounts are common).

to lower them again if the competitor retaliates by matching the wage increase, or if economic conditions change and high wages are no longer sustainable. The cost and risk of defecting from a collusive agreement is high.

In combination, the pay equity norm and downward nominal wage rigidity produce significant risks and costs for an employer to defect by raising wages. If the employer wishes to poach a competitor's workers, it must raise wages for all of its own workers along with the new employees. Then, irrespective of whether it succeeds in its efforts to poach, it must maintain higher wages for all employees, new and old. For such an employer, even success may be worse than the status quo. In product markets, by comparison, a seller can target discounts at a limited number of customers. Regardless of whether it succeeds in poaching those customers, it retains the option of raising prices at a later date, particularly if it can restore some type of collusive agreement. Accordingly, pay equity and downward nominal wage rigidity make collusive agreements in labor markets more stable than those in product markets.

We can illustrate the difference by using a standard example of the effect of monopsony. Suppose that a firm has fifty employees and pays each of them \$100,000. It would like to hire ten of its competitors' employees in order to expand its operations. To do so, it will need to offer these employees \$110,000 to attract them away from their current employers. But if it pays these new employees \$110,000, it will also have to raise the wages of its current employees to \$110,000. And once it has raised wages, it cannot lower them again. This means that the total cost of hiring the ten additional employees is \$1.6 million per year—\$1.1 million for the new employees themselves, and \$500,000 in additional salary for its existing employees—or the equivalent of \$160,000 for each new employee. Unless these new employees are highly productive, this is a losing proposition for the firm, even if its competitors don't attempt to retaliate.

This is a familiar result from the economic model of monopsony (or technically, oligopsony), which in fact assumes that the employer pays workers of identical productivity the same wage. In the mirror-image model of oligopoly, the same assumptions are made: the seller who lowers prices to obtain new customers must lower them for incumbent customers as well. But we think the model is more accurate for labor than for products. The identical wage/price assumption is based on a common intuition as well as

empirical evidence that sellers roughly charge the same to everyone (putting aside volume discounts and the like) and that employers roughly pay the same wage to everyone of equal productivity.⁵⁶ But the assumption in the product market case is based on the practicalities of distinguishing between customers who have private information about their willingness to pay. In fact, sellers can price discriminate (albeit only crudely), as demonstrated by a rich empirical literature.⁵⁷ By contrast, the assumption in the labor market case is based on the pay equity norm, which appears to be both quite powerful and unique to labor markets. That means that employers can wage discriminate even less effectively than sellers can price discriminate, and this difference may account for the greater stability of labor market collusion (and/or parallelism) than product market collusion (and/or parallelism), or so we conjecture.⁵⁸

It is true that the incentive of an employer to retaliate is also reduced because an employer who retaliates by matching the wage increase will have trouble lowering wages again when the first employer returns to cooperation. But, as before, the crucial distinction between labor markets and product markets is that the stakes of cheating are higher in the former. The combination of high switching costs, pay equity, and downward marginal wage rigidity means that employers who cheat on a cartel agreement and poach workers face the risk of incurring a large and persistent loss—much more so than sellers in the product market. Overall, downward nominal wage rigidity and pay equity are likely to increase the cost of defection, and hence to strengthen the stability of horizontal arrangements, relative to a seller cartel, where the parties enjoy more flexibility to adjust their behavior in response to the actions of others.

⁵⁶ Stefano DellaVigna & Matthew Gentzkow, *Uniform Pricing in U.S. Retail Chains*, 8 (Nat'l Bureau of Econ. Rsch, Working Paper No. 23996, 2019); Jonathon Hazell, Christina Patterson, Heather Sarsons & Bledi Taska, *National Wage Setting 14–20* (Nat'l Bureau of Econ. Rsch, Working Paper No 30623, 2022).

⁵⁷ See generally Stole, *supra* note 52.

⁵⁸ On the other hand, it may be easier for employees who receive outside offers to bring them to their employer and demand a raise than for a consumer who receives a discount offer from an outside seller to bring it to an “incumbent” seller (like a credit card company). Employers may also have subtle methods of compensating workers, e.g., giving them a nice office, better shifts, more interesting work, and so on.

D. Magnitude and Duration of Contracts

In an oligopoly, sellers who seek to increase market share by reducing prices take the risk that competitors will match their price discount. A seller can minimize this risk by seeking out large buyers and persuading any buyer (large or small) to enter a long-term contract.⁵⁹ Large buyers are attractive because they enable the seller to obtain a substantially larger market share with few transactions. Long-term contracts prevent competitors from luring back customers by matching the seller who initially cheats. Thus, oligopolies become less stable when large buyers exist, and long-term contracts are possible.⁶⁰

In labor markets, there is no such thing as a large worker. The magnitude of the input supplied by workers varies little—with an upper bound of how many hours can be squeezed into a week (and that is only forty hours for regular workers, plus overtime, which requires a higher wage). Thus, as a general pattern, the large-buyer source of instability will prevail more frequently in product oligopolies than in labor oligopsonies.

Long-term contracts are less common in labor markets than in product markets. Contracts in labor markets are typically at will, probably because courts very rarely are willing to deny workers the freedom to leave a job, and employers are rarely willing to allow a jury to second-guess their decisions to fire workers. But in practice, employees often remain in the same jobs for long periods of time because of the high switching costs we described earlier. Employers have also discovered that they can use noncompetes to prevent workers from moving to competitors, in this way duplicating the anticompetitive effect of long-term contracts without having to commit to a long employment relationship.⁶¹ Even when noncompetes are not enforceable, the *in terrorem* effect of a lawsuit may be sufficient. On average, workers stay in a job for around four years—and tenure for a substantial fraction of the workforce exceeds ten years—a period much longer than nearly all product market contracts.⁶²

⁵⁹ See U.S. Dep't of Just. & Fed. Trade Comm'n, *supra* note 14, at 27. ("Buyer characteristics and the nature of the procurement process can affect coordination. For example, sellers may have the incentive to bid aggressively for a large contract even if they expect strong responses by rivals.")

⁶⁰ Stigler, *supra* note 15, at 47.

⁶¹ Starr et al., *supra* note 2, at 76, 81.

⁶² STEVEN F. HIPPLE & EMY SOK, U.S. BUREAU OF LABOR STAT., TENURE OF AMERICAN WORKERS 2–3 (2013).

E. Pay Secrecy

In oligopoly theory, it is commonly believed that price secrecy undermines collusion and tacit coordination.⁶³ As the Horizontal Merger Guidelines note, “A market typically is more vulnerable to coordinated conduct if each competitively important firm’s significant competitive initiatives can be promptly and confidently observed by that firm’s rivals.”⁶⁴ If prices are not public information, then members of a cartel can easily cheat by cutting prices below the agreed rate. Even if prices are public, sellers can often offer customers secret discounts, disguised as volume discounts and the like. But sellers can penetrate the cloud of secrecy by asking customers to report price discounts offered by rivals and agreeing to match them—often with formal most-favored-nation commitments. And for a huge range of products sold to the general public—as opposed to business-to-business transactions, which are more likely to be confidential—it is not practical to conceal price information. As a general proposition, oligopoly is more likely to be sustained when prices are public than when they are secret. That is why agreements among competitors to share price information may result in liability under the antitrust laws.

This issue is particularly important in the context of labor markets because it affects the pay equity norm as well. If salaries within firms are confidential, then the pay equity norm has no force—an employee cannot demand equal pay if she does not know what her colleagues are making. And because the pay equity norm helps perpetuate wage cartels, wage secrecy will do that much more to undermine it.

While comparisons are difficult, it appears that wage information is more confidential than pricing information in the product markets. As long as sellers seek new customers, they must publicize their prices. By contrast, while employers also must publicize wages to attract workers, they can often maintain confidentiality with respect to raises, bonuses, and other forms of compensation for incumbent employees. Employers often impose a policy of prohibiting workers from discussing their compensation. And a powerful salary taboo prevails among employees even

⁶³ Stigler, *supra* note 15, at 46; Edward J. Green & Robert H. Porter, *Noncooperative Collusion Under Imperfect Price Information*, 52 *ECONOMETRICA* 87, 90 (1984).

⁶⁴ U.S. Dep’t of Just. & Fed. Trade Comm’n, *supra* note 14, at 26.

when employers do not prohibit the sharing of wage information.⁶⁵ In recent years, however, platforms like Glassdoor have enabled workers (and employers) to publicize wage information, so the era of wage confidentiality may be coming to an end. Pay-transparency laws in a number of states also require employers to reveal salary ranges to their employees and job applicants.⁶⁶

To the extent that wage information is more likely to be confidential than price information, this distinction between labor and product markets cuts in the direction of a greater risk of sustainable product oligopoly than labor market oligopsony. However, in many labor markets, wages are public information. (For some examples, see Part II.) Ironically, pay transparency laws and new hiring platforms like Glassdoor may result in lower rather than higher wages because the increase in transparency facilitates collusion among employers.⁶⁷ Our discussion also suggests that agreements to exchange wage information are more likely to facilitate collusion than agreements to exchange price information.⁶⁸

⁶⁵ Zoë B. Cullen & Ricardo Perez-Truglia, *The Salary Taboo: Privacy Norms and the Diffusion of Information*, 20–21 (Nat'l Bureau of Econ. Rsch., Working Paper No. 25145, 2018).

⁶⁶ F. Christopher Chrisbens & Christopher T. Patrick, *The Emerging Trend in State Pay Transparency Laws*, 11 NAT'L L. REV., no. 233 (Aug. 11, 2021). Pay-transparency laws have become politically popular in part because they help reduce gender disparities in wages. See, e.g., Michael Baker, Yosh Halberstam, Kory Kroft, Alexandre Mas & Derek Messacar, *Pay Transparency and the Gender Gap*, 20 (Nat'l Bureau of Econ. Rsch, Working Paper No. 25834, 2021). At the same time, they may reduce wages overall. See Cullen & Pakzad-Hurson, *supra* note 53, at 26.

⁶⁷ Interestingly, it is also possible that pay transparency may also suppress wages by enabling employers to credibly refuse to raise wages; for theory and evidence, see Cullen & Pakzad-Hurson, *supra* note 53, at 11–14, 26–27. If so, this effect is independent of that of employer collusion, though there could be interactions. For example, an employer could refuse a demand for a raise by telling employees that not only will it have to raise compensation for other employees, as Cullen and Pakzad-Hurson argued, but it will also have higher labor costs than competitors, which could drive it out of business. An employer could also use the fact that it is paying the same wages as competitors as an argument to its own workers that they are unlikely to land a higher-paying job elsewhere and have no credible claim to a raise. Information sharing over job-hiring websites could also lead to collusion among employers; however, some recent scholarship has found that information sharing among employers using a job-hiring platform did *not* reduce wages. Zoë Cullen, Shengwu Li, & Ricardo Perez-Truglia, *What's My Employee Worth?: The Effects of Salary Benchmarking* (2022) (unpublished manuscript) (on file with authors).

⁶⁸ For a case involving an alleged agreement to exchange wage information, see *Todd v. Exxon Corp.*, 275 F.3d 191, 195 (2d Cir. 2001).

F. Implications

Most of the factors we have considered—switching costs, equity norms, downward nominal wage rigidity, and magnitude and duration of contracts—provide reasons to worry that collusion and/or tacit coordination will be more stable in labor markets than in product markets. Only secrecy considerations point in the other direction, but the secrecy of wages is eroding, as noted above. The differences are not only directional; they appear in most cases to be significant, as shown by comparisons of elasticities in product markets and labor markets. High switching costs for counterparties may facilitate collusion, and switching costs are higher in labor markets than in product markets.

However, there is an ambiguity as to whether switching costs and related factors are more likely to lead to parallelism or collusion. If they lead to more parallel behavior, then they could also lead to less collusion: if firms obtain rents from parallel behavior, they have *less* incentive to take the extra steps of establishing a conspiracy. And if that is so, antitrust law might be less useful for addressing labor market collusion than product market collusion. But this is also a reason for expanding antitrust law so that parallel behavior would be subject to sanction, at least under some conditions. Moreover, one might also worry that if employers lock in workers for a long period of time, they will have stronger incentives to collude at the hiring stage, requiring stronger antitrust enforcement.

If collusion is more likely to be common in labor markets than in product markets, courts should be more receptive to collusion claims in labor markets than in product markets. At least until recently, the opposite has been the case: courts are skeptical about labor market claims and labor-side antitrust cases are rare.⁶⁹ Courts might begin by recognizing that the *Twombly* standard is too strict for labor market cases. The near absence of discovery and trials has meant a dearth of information about how labor market collusion works. *Twombly's* concern about excessive litigation is clearly not present.

Moreover, tacit coordination may be more stable in labor markets than in product markets, and therefore wages are more likely to be suppressed than prices inflated over the long term. If so, tacit coordination in labor markets is a more urgent problem

⁶⁹ POSNER, *supra* note 3, at 32–34. In the last year or so, more labor cases have been brought and are moving through the judicial system.

that calls for policy and legal reforms. At a minimum, the assumption in the literature that tacit coordination should be tolerated because the cure is worse than the disease should be reconsidered for labor-side antitrust. If the disease is worse in labor markets than in product markets, even a debatable cure may be justified.

II. A BRIEF LOOK AT SOME EVIDENCE

We have so far provided some reasons for believing that labor market collusion (both tacit and explicit) should be both worse and more common than product market collusion. If labor market cartels are more stable than product market cartels, then they should also be more lucrative, and therefore more common. The fact that, until recently, the government never criminally prosecuted labor market cartels is an independent reason for expecting that they flourish. But is there any evidence for these conjectures?

Adam Smith famously claimed that:

We rarely hear, it has been said, of the combinations of masters [employers]; though frequently of those of workmen. But whoever imagines, upon this account, that masters rarely combine, is as ignorant of the world as of the subject. Masters are always and every where in a sort of tacit, but constant and uniform, combination, not to raise the wages of labour above their actual rate. To violate this combination is every where a most unpopular action, and a sort of reproach to a master among his neighbours and equals. We seldom, indeed, hear of this combination, because it is the usual, and one may say, the natural state of things which nobody ever hears of. Masters too sometimes enter into particular combinations to sink the wages of labour even below this rate. These are always conducted with the utmost silence and secrecy, till the moment of execution, and when the workmen yield, as they sometimes do, without resistance, though severely felt by them, they are never heard of by other people.⁷⁰

Smith thus identified both tacit coordination and explicit collusion in labor markets but did not provide evidence. Some historians have found labor market collusion in a range of settings

⁷⁰ ADAM SMITH, *AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS*, vol. 1, 100–01 (6th ed., 1791).

across time and place.⁷¹ But even if labor market collusion was ubiquitous in the past when it was generally lawful, today is a different matter.

Commentators who have looked for evidence of *product* market conspiracies (that is, explicit collusion, not tacit coordination) have frequently observed that research in this area is hampered by the simple fact that conspirators do not disclose their conspiracies but keep them secret.⁷² Thus, the handful of studies on conspiracies are able to examine only those conspiracies brought to light by government enforcement, presumably only a fraction of the total. This problem is even more difficult for labor market conspiracies. Since the government began enforcement in 2020, when it indicted labor market conspirators for the first time ever, we have an inadequate track record, to say the least.⁷³ The best we can say is that recent indictments⁷⁴—along with promises of more to come—suggest that labor market conspiracies do exist. We can add to this small group the no-poach conspiracy of the Silicon Valley tech companies, which settled a civil suit with the DOJ in 2010.⁷⁵ A lawsuit against Tyson, Perdue, and other meatpackers alleges that these companies fixed the wages of employees.⁷⁶ And dozens of large retail franchises, including McDonald's, included no-poach clauses in their franchise agreements, which have a

⁷¹ See Vincent Delabastita & Michael Rubens, *Colluding Against Workers: Evidence from Belgium, 1845–1913*, at 32–33 (2021) (unpublished manuscript) (on file with authors).

⁷² Levenstein & Suslow, *supra* note 6, at 464.

⁷³ See *generally* Indictment, *United States v. Jindal*, 20-CR-00358, Dkt. No. 1 (E.D. Tex. Dec. 9, 2020).

⁷⁴ Valerie Bauman, Siri Bulusu & Erin Mulvaney, *Labor Cases Turn Criminal as DOJ Defines New Antitrust Approach*, BLOOMBERG L. (Jan. 3, 2022), <https://perma.cc/XX3B-5UTK>.

⁷⁵ Press Release, Office of Pub. Affairs, U.S. Dep't of Just., *Justice Department Requires Six High Tech Companies to Stop Entering into Anticompetitive Employee Solicitation Agreements* (Sept. 24, 2010), <https://perma.cc/RQ7W-Z2EK>. For an analysis of the impact of the collusion, see Matthew Gibson, *Employer Market Power in Silicon Valley* (IZA Inst. of Lab. Econ., Discussion Paper 14,843, 2021) (finding that collusion reduced salaries by 4.8%).

⁷⁶ Mike Leonard, *Tyson, Pilgrim's, Hormel to Face Poultry Worker Wage-Fixing Suit*, BLOOMBERG L. (Mar. 11, 2021), <https://perma.cc/E2H3-8B86>.

collusive flavor and have led to litigation.⁷⁷ A few other cases round out the group.⁷⁸

There is also the closely related question of whether tacit coordination takes place in labor markets. In product markets, where prices are usually public, we can at least observe whether sellers of identical goods charge identical prices. Evidence of parallel pricing comes from studies of markets where prices change in lockstep and independently of cost. Where a firm undercuts a price leader, and then the price leader lowers its prices even further, one can infer that tacit coordination has taken place.⁷⁹

Studies of parallel wage setting are rare, in part because wages are often confidential, and in part because labor economists have not been concerned with this topic. But a recent unpublished paper sheds light on this practice, and so we discuss it here.

A. Law Firm Associates

The market for associates at large law firms is highly structured. During the summer after their first year, law students interview with large law firms for summer positions, which they then hold during the summer after their second year in school.⁸⁰ Barring unusual circumstances, those students are then offered postgraduate employment with the same firms for which they worked over the summer.⁸¹ Large law firms hire a substantial proportion of their associates through this process.

⁷⁷ Alan B. Krueger & Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, 57 J. HUM. RES. S234, S325, S340–44 (Supp. 2022). For evidence that the collusion reduced wages, see Brian Callaci, Sergio Pinto, Marshall Steinbaum, & Matthew Walsh, *Vertical Restraints and Labor Markets in Franchised Industries* (2022) (unpublished manuscript) (on file with authors).

⁷⁸ See POSNER, *supra* note 3, at 47–51.

⁷⁹ The pricing pattern that gave rise to the dispute in *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 214–16 (1993), is a nice example. For a recent empirical case study of price leadership, see generally Nathan H. Miller, Gloria Sheu & Matthew C. Weinberg, *Oligopolistic Price Leadership and Mergers: The United States Beer Industry*, 111 AM. ECON. REV. 3123 (2021), and Joseph E. Harrington, Jr., *Collusion in Plain Sight: Firms' Use of Public Announcements to Restrain Competition* (2020) (unpublished manuscript) (on file with authors). Evidence of wage leadership among large retailers can be found in Ellora Derenoncourt, Clemens Noelke, David Weil & Bledi Taska, *Spillover Effects from Voluntary Employer Minimum Wages*, 6–7 & fig.1 (Nat'l Bureau of Econ. Rsch., Working Paper No. 29425, 2021).

⁸⁰ 2L OCI: *How the On Campus Interview Process Works*, JDEMPLOYED, <https://perma.cc/WB25-VT83>.

⁸¹ *Id.*

The other regimented characteristic of the market for law firm associates is the pay scale. Associates are typically paid in lockstep with one another, based on seniority: all first-year associates make the same salary, all second-year associates make the same salary, etc.⁸² More remarkably, associates at nearly every major firm in every major legal market across the country are paid identically. An associate at Kirkland & Ellis in Chicago makes the same salary as an associate at Skadden, Arps, Slate, Meagher & Flom in New York, who makes the same salary as an associate at Vinson & Elkins in Houston, despite the widely divergent costs of living and somewhat divergent billing rates across the three markets.⁸³ The bonuses paid by the firms are generally identical as well, though there are occasionally deviations.⁸⁴ In sum, an employee in this market can expect to be paid exactly the same amount no matter which firm in which city she chooses.

In a recent paper, Ryan Boone argued that associate salaries have been set via tacit coordination among firms.⁸⁵ For many years, the consistent associate pay scale was set via explicit collusion. Firms openly discussed the fact that they would follow the wages set by the firm of Cravath, Swaine & Moore, and the pay scale was referred to as the “Cravath scale.”⁸⁶ Wages were typically set at an industry conference held every year. In modern times, there is no evidence that explicit collusion has continued. But the fact of identical wages across the industry remains. After the conspiracy ended, Cravath matched or exceeded the salary increases offered by other firms for decades, resulting in a reputation for price leadership.⁸⁷ Cravath’s leadership was not complete. Over the past several decades, there have been multiple occasions when—spurred by an outside shock—one or more firms unilaterally raised wages. One such increase occurred in 2000, when the tech boom in Silicon Valley caused one Northern California firm to raise its associates’ pay scale.⁸⁸ After a short

⁸² *Biglaw Salary Scale*, BIGLAW INVESTOR [hereinafter *Biglaw Salary Scale*], <https://perma.cc/JNM2-ES6N>; Ryan Boone, *Tacit Collusion in Labor Markets: The Case of BigLaw*, in *ESSAYS ON LABOR DEMAND WITH MARKET IMPERFECTIONS* 6–7 (2021) (Ph.D. dissertation, Univ. Cal., L.A.).

⁸³ Boone, *supra* note 82, at 6–7, 184.

⁸⁴ See *Biglaw Salary Scale*, *supra* note 82.

⁸⁵ Boone, *supra* note 82, at 38.

⁸⁶ *Id.* at 6, 9, 184–86.

⁸⁷ *Id.* at 29–30.

⁸⁸ *Id.* at 28–29; see also Debra Baker, *Go West, Young Lawyer*, 86 A.B.A. J. 34, 38 (2000).

delay, every other major firm across the country matched the pay raise.⁸⁹ There was of course no talk of “punishing” the firm that had raised wages. But the effect was that any advantage that firm might have had against its competitors vanished in days.

Despite the fact that law firm associates are paid handsomely, their salaries have risen only modestly over the past several decades. The starting salary for first-year associates was \$125,000 in the year 2001. In the year 2021, it was \$205,000.⁹⁰ That equates to annual increases of 2.5%, barely above the rate of inflation. During this same time period, associates’ billing rates and firms’ profits have risen far more dramatically, reflecting significant increases in productivity and the demand for high-end legal services. Over the past twenty-five years, the salaries of partners have increased at roughly 1.4 times the rate of associate salaries.⁹¹ All told, there is substantial evidence that law firm associates are paid less than they would be in a fully competitive marketplace that did not have these rigid wage structures.⁹²

This system of parallel wage setting has persisted in the market for law firm associates for decades, a period during which all of the conditions we described in Part I that facilitate a stable wage equilibrium have been present.

1. High switching costs.

Switching between law firms can be difficult and time consuming for associates.⁹³ Open jobs are not typically advertised transparently and in a centralized manner. The process of

⁸⁹ David Leonhardt, *Law Firms’ Pay Soars to Stem Dot-Com Defections*, N.Y. TIMES (Feb. 2, 2000), <https://www.nytimes.com/2000/02/02/business/law-firms-pay-soars-to-stem-dot-com-defections.html>.

⁹⁰ See *Biglaw Salary Scale*, *supra* note 82.

⁹¹ See Boone, *supra* note 82, at 57 (finding that the ratio of associate pay to partner pay is 70% of what it was in 1994).

⁹² It seems quite unlikely that this decline in associate salary has been offset by the increase in implied compensation from the greater rewards that accrue from making partner. According to a broad-based survey of one hundred large law firms, only approximately 4% of associates make partner today. See Law Firm Transparency Directory, ABOVE THE LAW, <https://perma.cc/LN3L-QFM3>. The rate has even decreased in recent years: from 1950 to 1986, rates of associate promotion to partner ranged from 5% to 8%, Marc Galanter & Thomas M. Palay, *Why the Big Get Bigger: The Promotion-to-Partner Tournament and the Growth of Large Law Firms*, 76 VA. L. REV. 747, 785 (1990), while during the late 1990s and early 2000s the rates hovered between 5 and 6%, George P. Baker & Rachel Parkin, *The Changing Structure of the Legal Services Industry and the Careers of Lawyers*, 84 N.C. L. REV. 1635, 1669 (2006).

⁹³ See A. Harrison Barnes, *Firm Hopping*, FIND LAW (Dec. 20, 2016), <https://perma.cc/LE35-CPBX>.

obtaining a new job involves an extensive series of interviews.⁹⁴ Employees must find time for this search-and-interview process while simultaneously performing their current time-consuming associate jobs.⁹⁵ Perhaps more importantly, working in a large law firm can require a substantial amount of firm-specific knowledge, despite the outward appearance of similarity between firms. Associates work for partners, who decide which types of work they can be trusted to accomplish. The practice of law at such firms is a team endeavor, with associates working in groups and with partners on large, complex cases.⁹⁶ Moreover, the goal of many associates is to be promoted to partner.⁹⁷ The practice of law does not always involve easily quantifiable metrics—an associate's quantity of work can be quantified, but her quality of work is much more difficult to measure. A consistent track record of perceived high-quality work at a given firm and a series of close interpersonal relationships are thus considered essential to being made partner.⁹⁸ All of this makes the formation of relationships with fellow attorneys a substantial component of success at a large law firm. Associates cannot sacrifice those relationships and move firms without incurring significant costs.

2. Pay equity norm.

As we noted above, at essentially all large law firms, associates are paid in lockstep: lawyers at the same level of seniority within a given firm are all paid the same amount of base salary.⁹⁹ Bonuses will occasionally diverge depending upon productivity, but there are typically no more than two or three levels of bonuses for employees who meet particular billing quotas.¹⁰⁰

⁹⁴ See *How to Prepare for a Lateral Interview as an Associate: Looking to Improve Your Chances of Receiving an Offer?*, LATERAL LINK, <https://perma.cc/L4LN-WBP8>.

⁹⁵ Law firm associates are typically expected to bill at least two thousand hours, and in some cases many more. Boone, *supra* note 82, at 7–8, 40 n.71. The number of billable hours significantly understates the total number of hours worked, because many working hours are not billable.

⁹⁶ Center on the Legal Profession, Harvard Law School, *Lessons from Practicing Lawyers: Why Attorneys Work Together*, 1 THE PRACTICE (2015), <https://perma.cc/QD4P-NE5H>.

⁹⁷ Boone, *supra* note 82, at 7.

⁹⁸ Dona DeZube, *Law Partnership: What Does It Mean, and How Do You Get There?*, MONSTER, <https://perma.cc/RN8P-DAG6>.

⁹⁹ See *Biglaw Salary Scale*, *supra* note 82.

¹⁰⁰ Staci Zaretsky, *Biglaw Firm Puts Some Extra Oomph Into Bonuses for High Billers – We're Talking Above-Market Money!*, ABOVE THE LAW (Dec. 8, 2021), <https://perma.cc/DZ65-P5EG>.

The pay equity norm explains (or may explain) identical or nearly identical pay *within* law firms, at least if wage information is shared among employees. It cannot explain identical pay across firms. But of main relevance here, the pay equity norm would facilitate tacit coordination. A law firm that might be tempted to engage in wage discrimination—secretly offering higher pay to employees who threaten to leave—faces the risk that word will get out, and other employees will become angry and demoralized. Firms have worked around this problem in two ways. First, they have multiplied the number of pay tiers (for example, counsel or nonequity partner) so that they offer pay that is more closely tied to contribution.¹⁰¹ Second, they have increasingly offered bonuses to employees who bring in business.¹⁰² The pay equity norm is sustained because pay is still tied to publicly observable indicators of employee quality; at the same time, collusion or parallelism can take place across employers if either all firms adopt these variations or their practical effect is minor.

3. Downward nominal wage rigidity.

Wages for law firm associates have not declined at any point in the past five decades, including through repeated economic downturns.¹⁰³ For instance, during the Great Recession of 2008, law firms laid off large numbers of associates and reduced new hiring but did not reduce wages for associates.¹⁰⁴ This type of behavior in the midst of a recessionary downturn is evidence of downward nominal wage rigidity, and the existence of downward nominal-wage rigidity would help explain the longevity and robustness of wage parallelism in the market for lawyers.

4. Pay secrecy.

Associate pay is highly transparent. When any firm announces that it is raising salaries, that information is typically leaked to online trade publications and made public within a matter of hours, if not minutes.¹⁰⁵ Even information related to year-

¹⁰¹ Shari Davidson, *Not All Partners Are Created Equal: A Look at Partner Compensation*, JD SUPRA (May 14, 2021), <https://perma.cc/8YG5-QPKL>.

¹⁰² Tracey J. Coates, Eva N. Juncker & Geoffrey Witherspoon, *Law Firm Origination Policies: Climbing the Mountain to Equity*, LAW PRACTICE TODAY (Jun. 15, 2020), <https://perma.cc/LAZV-WA87>.

¹⁰³ Boone, *supra* note 82, at 58.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.* at 35.

end bonuses, which can differ slightly more between firms and between associates within firms, typically becomes public knowledge within hours of its announcement.

The relative transparency of associate salaries is facilitated by the fact that associates within each firm are generally paid in lockstep. That means that for one firm to keep tabs on another firm's pay scale, it is not necessary to know how much each individual employee is paid—thereby eliminating the typical impediment to pay transparency. Instead, each firm must know only the other firms' generalized pay scale, which quickly becomes public knowledge once it is disseminated throughout the firm.

5. Magnitude and duration of contracts.

As with most labor markets, each law firm associate contributes a roughly equivalent amount of labor, an amount that is small compared to the overall output of the firm. There is no analogue to a large buyer. A law firm therefore cannot cheat on the cartel by hiring a single superhuman lawyer who could have a significant impact on market share. Thus, a firm that seeks to achieve larger market share must undergo the complex, costly, and risky maneuver of raiding firms and hiring many lawyers at once, by offering them pay above the cartel level. This appears to be quite difficult, contributing to the stability of the cartel.

Law firms do not try to bind associates with long-term contracts, and noncompetes are not permitted. As in other cases, the existence or absence of long-term contracts can be seen as evidence of a cartel or else as an exogenous factor that facilitates cartels. For example, one reason that law firms may avoid long-term contracts with associates is that they need to be able to fire employees in order to maintain the cartel where the pay equity norm and downward nominal wage rigidity prevent them from reducing wages in response to a demand shock. From the other angle, law firms may avoid long-term contracts because they would necessarily involve judicial second-guessing of decisions to fire employees, and law firms cannot take the risk that judges may block their firing decisions. If this is the case, long-term contracts are inherently uneconomical, which could mean that law firms cannot realistically cheat on cartels by attracting employers with high wages embodied in long-term contracts that would lock in the gains from cheating.

B. Other Professionals

While Boone's study is confined to the market for law firm associates, there is reason to believe that similar patterns prevail in other professional markets. Salaries at the Big Four accounting firms are nearly identical across firms, with between-firm deviations of less than 10% at any given level of seniority.¹⁰⁶ Lockstep salaries based on levels of seniority also prevail.¹⁰⁷ There is even a history of what appears to be explicit collusion within the industry. In 2005, KPMG (one of the Big Four) was under federal investigation into allegations that it had designed an illegal tax shelter.¹⁰⁸ Concerned that KPMG would collapse as Arthur Andersen had several years earlier, the other three large accounting firms instructed their personnel not to poach either KPMG's clients or its employees.¹⁰⁹ This is a peculiar instance, in that it represents potentially explicit cartelization of both the product and the labor side of the firms' businesses, albeit supposedly for a competitive purpose—the firms hoped to preserve the existence of their competitor in order to avoid federal antitrust regulation.¹¹⁰ (Whether colluding to maintain competition in order to avoid further antitrust regulation is procompetitive or anticompetitive is a question best left for future antitrust exams.)

Salaries within investment banks show a similar pattern. Nearly all large investment banks pay the same salaries to employees at the same levels of seniority.¹¹¹ And like law and accounting firms, tacit coordination is facilitated by lockstep salaries within the firms.¹¹² Even salaries for physicians, which one might expect to vary widely depending on whether the physician

¹⁰⁶ *Big Four Accounting Salary – Overview*, CFI (Apr. 22, 2022) [hereinafter *Big Four Accounting Salary*], <https://perma.cc/K8T3-TB54>; Samuel, *Big 4 Accounting Firm Salary, HOW I GOT THE JOB* (July 15, 2021), <https://perma.cc/3J9Y-4SRA>.

¹⁰⁷ *Big Four Accounting Salary*, *supra* note 106.

¹⁰⁸ Press U.S. Dep't of Just., *KPMG to Pay \$456 Million for Criminal Violations* (Aug. 29, 2005), <https://perma.cc/NC5Z-F5PV>.

¹⁰⁹ Jim Peterson, *Balance Sheet: Bottom Line is Survival*, N.Y. TIMES (Sept. 9, 2005), <https://www.nytimes.com/2005/09/09/your-money/balance-sheet-bottom-line-is-survival.html>.

¹¹⁰ Prem Sikka, *Enterprise Culture and Accountancy Firms: New Masters of the Universe*, 21 ACCOUNTING, AUDITING & ACCOUNTABILITY J. 268, 279–80 (2008).

¹¹¹ Brian DeChesare, *Investment Banker Salary and Bonus Report: 2022 Update*, MERGERS & INQUISITIONS (2021), <https://perma.cc/K5MA-22T4>; *Investment Banking Analyst Salary Guide: Average Base and Bonus Salaries for Investment Banking Analysts*, WALL STREET PREP [hereinafter *Investment Banking Analyst Salary Guide*], <https://perma.cc/K2NP-PQFB>.

¹¹² *Big Four Accounting Salary*, *supra* note 111.

works for a hospital, an HMO, or in some other capacity, tend to bunch at similar levels. Here, there are centralized sources of information—the Medical Group Management Association, the American Medical Group, and the American Medical Association—that conduct regular surveys of physician salaries and publish the results, which are then used to set salaries.¹¹³ According to the Medical Group Management Association, “Ninety-nine percent of the time, compensation will be consistent with the marketplace,” with “the marketplace” defined by the survey data the Medical Group Management Association has gathered.¹¹⁴ Here, the central repository of salary information may be facilitating parallel wage-setting, just as central repositories of pricing data (such as on gasoline) have historically been used to facilitate parallel price setting.¹¹⁵

To sum up, there is strong reason for believing that identical or similar salaries across firms for several major professions do not reflect the law of one price (or wage), but either tacit or explicit collusion. This also means that these professionals are paid below their marginal revenue product, resulting in the undersupply of their services and inflated prices.

CONCLUSION

We have shown that there are theoretical reasons, and a smattering of evidence, to believe that parallelism and explicit collusion take place in labor markets, and that this problem is large rather than small. But many ambiguities remain, and so we urge researchers to conduct more studies of wage-setting in labor markets.¹¹⁶

If further research establishes that both collusion and tacit coordination are ubiquitous, as we suspect, then policymakers and courts should consider the following remedies. First, they should weaken the *Twombly* standard for allegations of explicit

¹¹³ Bonnie Darves, *Physician Compensation Models: The Basics, the Pros, and the Cons*, NEW ENG. J. OF MED. CAREER CTR. (Oct. 18, 2011), <https://perma.cc/S8VJ-D5HZ>.

¹¹⁴ *Id.*

¹¹⁵ Asker & Nocke, *supra* note 72, at 12–14. On evidence of collusion in the medical residency matching program, see George L. Priest, *Timing “Disturbances” in Labor Market Contracting: Roth’s Findings and the Effects of Labor Market Monopsony*, 28 J. LAB. ECON. 447, 463–66 (2010). The matching program was challenged in court, but the lawsuit was rendered moot by Congress, which created an antitrust exemption for the program.

¹¹⁶ We have also painted with a broad brush and should stress that because labor markets are highly complex and diverse, the various generalizations we have discussed do not apply to all labor markets.

labor market collusion. With so little known about labor markets, and general secrecy about salaries, plaintiffs should be given a chance to develop their cases through discovery.

Second, policymakers and courts should give serious thought to relaxing the immunity extended to firms that engage in parallel behavior in labor markets. While the remedy problem identified by Turner is a serious one, it is not a reason to block lawsuits that challenge tacit coordination. Requiring cost-plus pricing seems a bridge too far under current antitrust law for the reasons Turner described more than fifty years ago. But there may nonetheless be instances where defendants have a history of lockstep wage-setting, including punishing cheaters, and where plaintiffs can show—with reference to more competitive markets—that tacit coordination has led to wages below what would be paid in a but-for world in which tacit coordination did not take place. In these cases, they should be entitled to damages.¹¹⁷ Economists will sometimes be able to calculate damages by using similar markets with a larger number of employees as a baseline.

Third, if labor markets are more vulnerable to parallelism or explicit collusion than product markets are, then antitrust law can and should address this risk outside of Section 1 of the Sherman Act as well as within it. If there is less competition in labor markets than in product markets, then the risk of coordinated effects is higher for employer mergers than for seller mergers, and accordingly the merger standards should be more restrictive for employer mergers than for seller mergers, under Section 7 of the Clayton Act.¹¹⁸ Entry barriers are also probably higher in labor markets than in product markets because of higher switching costs; if so, monopolization (monopsonization) will be more likely to succeed in labor markets, potentially justifying stricter labor market standards for Sherman Act Section 2 monopolization claims.¹¹⁹

Finally, antitrust enforcers should keep an eye out for nonprice impacts of anticompetitive behavior in labor markets. Because of downward nominal wage rigidity, firms may exercise

¹¹⁷ For a tentative suggestion along these lines, see POSNER, *supra* note 3, at 92.

¹¹⁸ Cf. Naidu et al., *supra* note 3, at 582–83.

¹¹⁹ See Farrell & Klemperer, *supra* note 22, at 2005, who remarked in connection with product markets: “Because large-scale entry into switching-cost markets is hard (whether or not inefficiently so), there may be much more incentive for monopolizing strategies such as predation or merger than there is in markets in which easy entry limits any market power.”

monopsony power either by raising wages at a lower rate or by worsening job conditions. Both types of behavior are harder to detect than the spikes in prices that take place when new monopolists exercise their market power.