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ABSTRACT

We study no-poach cartels using a wage-posting model that puts worker poaching at the center of labor market competition. Even when just two out of ten employers in a local labor market collude, wages fall by almost 5% market-wide. The reason is that no-poach agreements suppress competition along the job ladder, with spillovers to non-colluding firms. We then compare no-poach agreements to two other forms of anti-competitive conduct in the labor market: noncompete agreements and wage fixing. No-poach agreements have by far the largest negative wage effects.

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1 Introduction

A series of high-profile no-poach agreements in the labor market—where several employers in a labor market agree not to pursue each other's workers—have come to light in recent years. The most famous cases involve the US tech industry, Hollywood animation studios, and healthcare employers, and a case involving Duke University and UNC. Similar landmark cases have recently been decided in the EU, with the European Commission prosecuting a no-poach cartel (in the food delivery industry) for the first time ever in 2025.[1]

This paper integrates no-poach agreements into the "dynamic monopsony" model of Gottfries and Jarosch (2026a). The framework is ideally suited for this because it features i) worker poaching, ii) costly turnover, iii) wage competition along the job ladder, and iv) endogenous labor demand from large employers. We show how to analytically characterize the resulting equilibrium in closed form and discuss several key features of the resulting allocation: For instance, wages under a cartel are always lower than under baseline; profits are higher if demand is not too inelastic; and profits are equal inside and outside the cartel. We draw out noteworthy implications for whistle-blowing and the stability of a cartel. We also characterize the equilibrium with a hub-and-spoke cartel where a single hub has bilateral agreements with various spokes, akin to the Silicon Valley case.

We then calibrate the model to quantitatively gauge the damage such a cartel can do. We find large negative market-wide wage effects of almost 5% even when only 2 out of 10 employers enter such an agreement. These reflect significant spillovers to outside employers where wages fall by 3.7%. The reason is that a no-poach agreement bunches the colluding firms' offers at the reservation wage. Because workers there accept any offer, outside firms see them as no different from the unemployed—a pool to hire from rather than a rival's workforce to bid away. Poaching among outsiders slackens and wages compress across the whole market, not only at the cartel. We show that the wage losses can get further amplified when rents are large or when there are complementary factors. When demand is highly elastic or the labor market has slack and there is consequently little poaching competition we find smaller effects. The wage losses are associated with a significant expansion of output and employment due to the falling user cost of labor.

The rising interest in no-poach agreements is part of a broader pivot among economists, regulators, and policy-makers towards imperfect competition and anti-competitive conduct in the labor market. Besides no-poach agreements, two practices that receive a

[1] See Posner (2021) for an overview of evolution of labor market antitrust in recent years. See Posner and Zheng (2025) for the Silicon Valley no-poach cartel specifically. See OECD (2020) for a policy treating no-poach agreements as cartel conduct.

considerable amount of interest are *noncompete agreements*—where a worker commits not to transition to the competition as part of their work contract—and *wage fixing agreements*—where an employer cartel fixes a wage ceiling. We have studied the former in Gottfries and Jarosch (2026a) and the latter in Gottfries and Jarosch (2026c) and so the last part of this paper offers a horse-race between all three practices using a unified framework.

Maybe surprisingly, the wage losses from a no-poach agreement are by far the largest. Compared with noncompetes, they command no compensating differential and do not lead to a pro-competitive demand response (because workers under noncompetes are effectively excluded from all employers). Compared with wage fixing cartels, no-poaching cartels are less curtailed by the outside competition which has a user cost advantage under a wage fixing scheme.

Our paper speaks to a fast-growing literature on employer collusion in the labor market. No-poach agreements are now central to antitrust enforcement (Prager, 2026; Naidu et al., 2018; Posner and Zheng, 2025), and have been studied by a small empirical literature: Krueger and Ashenfelter (2022) find no-poach clauses in 58% of major franchise contracts, Gibson (2025) estimates that the Silicon Valley tech agreements lowered affected workers' salaries by roughly 6%, Lafontaine et al. (2023) tie franchise no-poach clauses to lower wages, and Delabastita and Rubens (2025) and Sharma (2025) use production- and demand-side data to detect employer collusion and gauge its sizable wage and employment effects. This work is largely empirical, and where it is structural it identifies collusion within static models of cooperative wage-setting in the industrial organization tradition. We instead build the agreement from the ground up: to our knowledge, ours is the first equilibrium model of no-poach agreements, and we develop it in the natural laboratory for the question—a wage-posting economy with on-the-job search, costly turnover, and explicit poaching along the job ladder.

2 Model

We build on the wage-posting framework with granular firms of Gottfries and Jarosch (2026a).[2] This section briefly lays out the baseline framework and characterizes its equilibrium. Section 3 then introduces no-poaching agreements.

There is a unit measure of workers and a finite number $M > 1$ of firms. All agents have linear preferences and discount the future at rate r. Unemployed workers receive flow utility b. Employed workers earn a contracted wage w and separate into unemployment at exogenous rate δ. Both unemployed and employed workers search, with the employed searching at relative efficiency $s \in (0, 1]$. Firm i produces output

[2]See Gottfries and Jarosch (2026b) for a simple version and characterization of that model.

$y_i = x n_i^\alpha$ with $\alpha \in (0,1)$, where n_i is firm-level employment and x is the common level of productivity. Firms choose a Poisson rate ψ_i at which workers make contact with one of their offers, as well as a distribution of posted wages F_i from which each offer is drawn. Generating contacts is costless, but hiring a new worker entails a cost c; this hiring cost is the fundamental friction in the model.[3] We assume that workers move jobs when indifferent. Market-level inverse demand is $p = \bar{Q}^{1/\eta} Y^{-1/\eta}$, where $Y = \sum_j y_j$ is total output and η is the demand elasticity. Firms take their price impact into account when choosing employment.

Throughout, we restrict attention to symmetric equilibria, in which all firms of a given type post the same wage-offer distribution at the same contact rate.[4] We show below that such an equilibrium exists in both the baseline and the cartel case, and we characterize it using a guess-and-verify approach to keep the exposition streamlined. For a rigorous treatment, we refer the reader to Gottfries and Jarosch (2026a) and Gottfries and Jarosch (2026c), who prove existence and uniqueness in the baseline and with a wage-fixing cartel, respectively without imposing symmetry.

Workers. Given symmetry and random search, workers' acceptance decisions depend only on wages. Unemployed workers accept any offer exceeding a common reservation wage w_r; employed workers accept any offer weakly above their current wage, irrespective of the employer. Dropping subscripts for convenience, the values of unemployment and employment satisfy

$$rU = b + M\psi \int_{w_r}^{\infty} (W(\tilde{w}) - U)\, dF(\tilde{w}), \tag{1}$$

$$rW(w) = w + \delta\,(U - W(w)) + (M-1)s\psi \int_{w}^{\infty} (W(\tilde{w}) - W(w))\, dF(\tilde{w}). \tag{2}$$

Firms. As shown in Gottfries and Jarosch (2026a), the firm problem can be cast as firm i directly choosing employment n_i and the distribution of paid wages G_i:

$$\max_{\{n_i, G_i\}} \left\{ p(Y) x n_i^\alpha - n_i \int_{w_r}^{\infty} \underbrace{\left(w + c\left(\delta + s \sum_{j \neq i} \psi_j (1 - F_j(w^-)) \right) \right)}_{\text{user cost of labor}} dG_i(w) \right\}, \tag{3}$$

[3] Employed workers are not eligible for offers from their own current employer. This assumption allows for a complete closed-form characterization of the equilibrium. It is easy to allow for "internal promotions" (as we do in Gottfries and Jarosch (2026a,c)), but in this case the equilibrium wage offer distribution with no-poach agreements needs to be solved for numerically.

[4] In the baseline there is only one firm type; the qualification 'of a given type' becomes relevant only once we introduce the cartel.

subject to G_i being a CDF with $G_i(w_r^-) = 0$. The user cost of a worker at wage w consists of the wage plus the cost of replacing the worker, who separates to unemployment at rate δ and is poached at rate $s\sum_{j\neq i}\psi_j(1-F_j(w^-))$. Optimality requires that the user cost is equated across all wages a firm offers and equal to the marginal revenue product.[5]

Baseline equilibrium. A symmetric equilibrium exists. Let $\lambda \equiv M\psi$ denote the total offer rate to unemployed workers. Then, the wage offer distribution is uniform,

$$F(w) = \frac{M}{M-1}\frac{w-w_r}{s\lambda c} \tag{4}$$

and the reservation wage and contact rate are jointly determined by

$$w_r = b + c\left(1 - s\frac{M-1}{M}\right)\left(\lambda - \frac{M}{M-1}\frac{r+\delta}{s}\log\left(\frac{r+\delta+s\frac{M-1}{M}\lambda}{r+\delta}\right)\right), \tag{5}$$

$$\alpha\bar{Q}^{1/\eta}\bar{x}^{(\eta-1)/\eta}\left(\frac{\lambda}{\lambda+\delta}\right)^{\alpha(\eta-1)/\eta-1}\left(1-\frac{1}{M\eta}\right) = w_r + c\left(\delta + s\frac{M-1}{M}\lambda\right), \tag{6}$$

where $M^{1-\alpha}x = \bar{x}$ is treated as a constant so that aggregate productivity is independent of M. These three equations uniquely determine F, λ, and w_r and fully characterize the equilibrium; firm-level employment is $n = \lambda/((\delta+\lambda)M)$. It is straightforward to see that (4) ensures the equalization of user costs, (5) is the standard job ladder reservation wage adjusted for granularity and using the uniformity of wage offers, while (6) equates the marginal revenue product of labor with its user cost, evaluated at reservation.

3 No-Poaching Agreements

3.1 Setup

We model a no-poaching agreement as a commitment between a set $\mathcal{C}$ of $K \leq M$ firms—henceforth the *cartel*—not to hire each other's workers. Unlike noncompete agreements—which are contractual agreements between workers and firms—no-poaching agreements are between firms and strictly illegal and hence happen in secrecy.[6] We therefore assume the collusion is unobserved by workers, who hold the beliefs of the no-cartel equilibrium: they continue to evaluate jobs based solely on the wage, and

[5] To see this, note that a firm posting wages with different user costs could profitably shift mass to the lowest-cost wage.

[6] Key legal cases (e.g., the Silicon Valley no-poach conspiracy, Duke and UNC, Delivery Hero and Glovo) all involve concealed agreements.

the reservation wage remains at its baseline value. This is in line with the secret and illegal nature of these arrangements and the difficulty workers would face in inferring collusion from data on typically narrow local or occupational labor markets.

The agreement, however, is imperfect and workers employed at a cartel firm do receive offers from other cartel members $j \in \mathcal{C}$, but at reduced rate $\kappa\psi_j$ with $\kappa < 1$, typically small. Non-cartel firms ("outsiders") are aware of the cartel and respond to it in their choices. The problem of a cartel firm $i \in \mathcal{C}$ is

$$\max_{\{n_i, G_i\}} \left\{ p(Y) x n_i^{\alpha} - n_i \int_{w_r}^{\infty} \left(w + c \left(\delta + s \sum_{j \neq i} \kappa^{\mathbf{1}\{j \in \mathcal{C}\}} \psi_j (1 - F_j(w^-)) \right) \right) dG_i(w) \right\}. \tag{7}$$

The sole difference to (3) is that turnover to other cartel members is reduced to κ. The problem for non-cartel firms remains unchanged.

3.2 Equilibrium with a Symmetric Cartel

Proposition 1 (Equilibrium Characterization)**.** *The following constitutes an equilibrium, symmetric within each firm type.*

(i) Posting. Each of the $M - K$ outsiders posts uniformly on an upper interval $(w_1, w_u]$ at rate ψ_o; each of the K cartel firms posts uniformly on a lower interval $[w_r, w_1]$ at rate ψ_c and on the upper interval at the reduced rate $\psi_o/(K - \kappa(K-1))$. The cdfs are

$$F_c(w) = \frac{w - w_r}{s\,\kappa(K-1)\,\psi_c\,c}, \quad w \in [w_r, w_1]; \qquad F(w) = \frac{w - w_1}{w_u - w_1}, \quad w \in (w_1, w_u], \tag{8}$$

with $w_1 = w_r + s\,\kappa(K-1)\,\psi_c\,c$ and $w_u = w_1 + s\big(M - K - 1 + \frac{K}{K - \kappa(K-1)}\big)\psi_o\,c$. Outsiders post nothing below w_1.

(ii) User cost. All M firms face the same user cost,

$$\omega = w_u + c\delta. \tag{9}$$

(iii) Employment and contact rates. All firms therefore have the same employment $n = (1-u)/M$, with unemployment given by

$$u = \frac{\delta}{\delta + K\psi_c + \big(M - K + \frac{K}{K - \kappa(K-1)}\big)\psi_o}. \tag{10}$$

The contact rates (ψ_c, ψ_o) are pinned down by optimal hiring,

$$\alpha \bar{Q}^{1/\eta} \bar{x}^{(\eta-1)/\eta} (Mn)^{\alpha(\eta-1)/\eta - 1} \Big(1 - \tfrac{1}{M\eta}\Big) = \omega, \tag{11}$$

together with equal employment, $n_c = n_o$, which reduces to

$$\frac{\psi_c\, u}{\delta + (w_u - w_1)/c} = \frac{(K-1)(1-\kappa)}{K - \kappa(K-1)}\, n \left(\frac{\delta + (w_u - w_1)/c}{\delta} \right)^{\frac{s\,\psi_o\, c}{w_u - w_1}} . \tag{12}$$

Proof sketch. Any equilibrium needs to satisfy two conditions: first, firms must be indifferent across any wages they post given what all other firms choose to do.[7] Second, the marginal revenue product of labor under the employment implied by everyone's choices must equal the user cost of labor implied by everyone's choices. It is straightforward to verify that the characterization above satisfies both. We will next discuss several properties that are informative about the underlying economics.

The near-mass. Under a strict pact ($\kappa = 0$) the cartel would post all its jobs at w_r. With $\kappa > 0$, mass cannot survive: by the move-when-indifferent assumption, two cartel firms posting the same wage churn workers between one another at rate $\kappa\psi$, so each strictly prefers to shade its offers a little, eliminating all mass in equilibrium, the standard force operative in BM settings.

Consistency on the upper interval. Posting and poaching on the upper interval guarantee user cost equalization: an outsider's worker is poached at rate $s\big[(M-K-1)\psi_o + \frac{K\psi_o}{K-\kappa(K-1)}\big](1-F(w))$, a cartel worker at rate $s\big[(M-K)\psi_o + \frac{\kappa(K-1)\psi_o}{K-\kappa(K-1)}\big](1-F(w))$ which is the same. Intuitively, the cartel firms collectively act the same as a single outside employer and so, despite the no-poach agreement, experience the same amount of outside competition for their workers (including the within cartel transitions due to the porosity κ).

Equal employment. Posting less aggressively on the upper interval, cartel firms would be smaller than outsiders, hence the near-mass where only the cartel posts. The rate ψ_c is pinned down so that the extra hires from the bottom bring each cartel firm to the same employment as an outsider. This is required by optimality given that both have the same user cost of labor. Consequently, profits are also equated across all firms.[8]

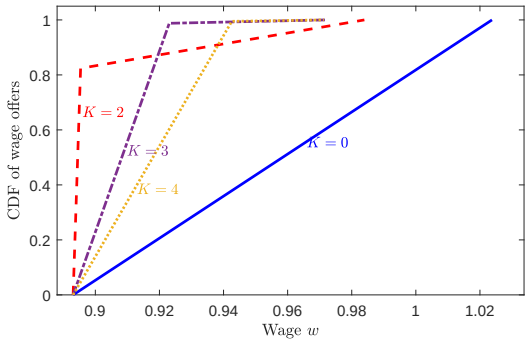
Cartel Posting Behavior. As $\kappa \to 0$ the near-mass collapses to a literal mass at w_r; as $\kappa \to 1$ the agreement vanishes and the equilibrium returns to the baseline.[9]

It is straightforward to derive equations (8) through (11). (12) equates the employment at the lower interval on the left hand side with the cartel's employment shortfall

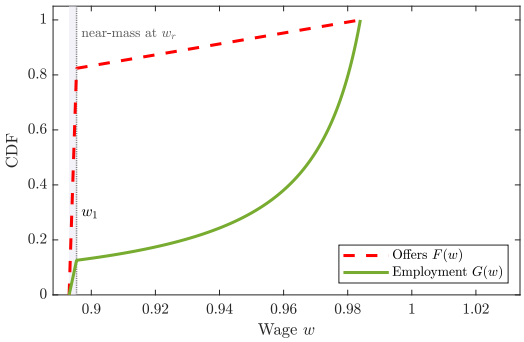
[7] The user cost of labor must be equated across cartel firms (and separately for outsiders) since any cartel firm can always offer a wage just above the highest wage of any other cartel firm. Since any outside firm can always offer a wage just above the highest wage of any cartel firm where the no-poach agreement has no bite, the user cost must be equated across all firms.

[8] We discuss below why it might nonetheless be rational to form a cartel and why it might be stable.

[9] Without the symmetry restriction, the strict pact ($\kappa = 0$) admits a continuum of asymmetric equilibria: aggregate cartel behavior is pinned down — a mass at w_r plus upper-interval posting behavior that collectively mimics a single outside firm — but its split across individual cartel members is indeterminate.



(a) Wage-offer distribution F under a no-poach cartel, for cartel sizes $K \in \{0, 2, 3, 4\}$.



(b) F and G in a no-poach equilibrium ($K = 2$).

Figure 1: Wages with a no-poach cartel, baseline calibration.

on the upper interval on the right hand side. We derive it in Appendix A.1.

Figure 1a plots the market-wide distribution of posted wages for cartel sizes $K \in \{0, 2, 3, 4\}$ for our calibrated model. Absent the cartel, all firms post uniformly. Even with only 2 out of $M = 10$ firms colluding, the cartel employers account for most of the offers which are heavily concentrated near the reservation wage. As the cartel grows, more mass piles up near the reservation wage w_r, spread out on a wider interval, while the highest wage w_u falls.

We next separately present useful closed form expressions for the distribution of wages in the cross section, average wages, and for total unemployment u.

Corollary 1. (i) The cross-sectional wage distribution *is*

$$G(w) = \frac{u}{(1-u)\big(\delta + (w_u - w)/c\big)} \times \begin{cases} K\psi_c\, F_c(w), & w \in [w_r, w_1], \\ K\psi_c + \Big[(M-K)\psi_o + \frac{K\psi_o}{K - \kappa(K-1)}\Big] F(w), & w \in (w_1, w_u], \end{cases} \tag{13}$$

with F_c, F *from* (8).

(ii) The average wage *is*

$$\bar{w} = w_u - G(w_1)\Big[(c\delta + w_u - w_1)\,\varphi\Big(\tfrac{w_1 - w_r}{c\delta + w_u - w_1}\Big) + (w_u - w_1)\Big] - \big(1 - G(w_1)\big)\, c\delta\, \varphi\Big(\tfrac{w_u - w_1}{c\delta}\Big), \tag{14}$$

where $\varphi(x) \equiv (1 + 1/x)\ln(1 + x) - 1$.

Proof sketch. G follows from standard flow balance, recognizing that it follows directly from the characterization in Proposition 1 that the rate at which any worker is poached from above is just $(w_u - w)/c$; the numerators are just the inflow into the pool of those earning less than w, all coming from unemployment. The average wage

(14) follows from $\int w\, dG(w) = w_u - \int_{w_r}^{w_u} G(w)\, dw$, evaluating the integral.

Figure 1b plots the offer distribution F (Proposition 1) and employment distribution G (Corollary 1) of the equilibrium. F has the two-part shape of Proposition 1—a near-mass on $[w_r, w_1]$ where only the cartel posts, then a uniform interval $(w_1, w_u]$. The employment distribution G first order stochastically dominates F because workers move up the wage ladder.

3.3 Impact of the Cartel

With this in hand, we can evaluate the impact of a cartel on average wages. We consider the general case with $K \geq 2$ and contrast it with baseline, $K = 0$. We indicate baseline values with a 0 sub- or superscript.

Lemma 1 (Cartel lowers the user cost)**.** *The user cost of labor is lower whenever a cartel is active, $\omega < \omega_0$.*

The proof is in Appendix A.2. Intuitively, this is a consequence of falling turnover due to the no-poaching agreement.

Proposition 2 (Cartel lowers the average wage)**.** *The average wage is lower whenever a cartel is active, $\bar{w} < \bar{w}_0$.*

The proof is in Appendix A.3. Intuitively, it uses that the wage offer distribution under a cartel is first order stochastically dominated by the wage offer distribution under the baseline, as can be seen in Figure 1a.

Corollary 2 (Profits)**.** *If demand is elastic, $\eta > 1$, the cartel strictly raises profits.*

Proof. Under optimal hiring, marginal revenue product equals the user cost, $\omega = \alpha p x n^{\alpha-1}\big(1 - \frac{1}{M\eta}\big)$. Hence $\omega n = \alpha\big(1 - \frac{1}{M\eta}\big) py$ and each firm's profit is

$$\pi = p\, y - \omega n = \Big[1 - \alpha\big(1 - \tfrac{1}{M\eta}\big)\Big] p\, y,$$

proportional to its revenue; aggregate profit is thus proportional to total revenue pY. By Lemma 1 the cartel raises employment, so output Y rises, and revenue pY (hence profits) rises when $\eta > 1$. □

Implications. A number of properties are noteworthy.

Equal Profits. A partial equilibrium analysis would attribute all the gains from collusion to the cartel employers who enjoy lower turnover. In general equilibrium, however, the benefits are fully shared with the outside employers; user costs, employment, and profits are equated across all firms.

Stability. Since cartel and outsider profits are equal, one might worry that membership confers no advantage and the cartel is fragile. Standard trigger strategies address this: a single deviation triggers reversion to the no-collusion equilibrium, so the payoff-relevant comparison is cartel profits versus no-collusion profits, not cartel versus outsider profits. By Corollary 2, cartel profits strictly exceed no-collusion profits whenever $\eta > 1$, so as long as demand is sufficiently elastic no member gains from triggering reversion and trigger strategies sustain the cartel.[10]

No incentive to whistle-blow. In addition, the outsiders have no incentive to report the cartel for two reasons. First, they are doing just as well as the cartel firms. Second, they also recognize that profits are strictly larger under the cartel than they would be without one.

Comparison with noncompetes. Noncompete agreements, as modeled in Gottfries and Jarosch (2026a), eliminate on-the-job search for affected workers and require a compensating differential $w_r^{nc} > w_r$. But while noncompetes are voluntary, no-poaching agreements are illegal and hence secret which means workers receive no compensation and, unaware, accept jobs at w_r. Firms with noncompetes also pile up at the bottom of the job ladder, but pay w_r^{nc} rather than w_r.

A second, more subtle channel reinforces this. Under noncompetes the affected workers, barred from on-the-job search, are effectively removed from the searchable pool; outside firms must post more aggressively to reach the same employment, and the extra competition for the remaining workers bids wages up. No such force operates under no-poaching: cartel workers remain open to outside offers, so outsiders' hiring is unaffected and this pro-competitive effect is not operative.

No-poaching agreements therefore seem more extractive, a point we return to quantitatively in Section 4.2.

3.4 Hub-and-Spoke Network

This section shows the resulting allocation in our model when a single *hub* has bilateral no-poaching agreements with K of the firms, its *spokes*, while the remaining $M-K-1$ *outsiders* hold no agreements at all. The spokes are tied to the hub alone, not to one another, and so poach each other freely. We continue to assume that all firms in the market are aware of the collusion while workers are not. The following proposition characterizes the resulting equilibrium.[11]

We entertain this for two reasons. First, no-poach agreements are sometimes

[10] We make a similar point for wage-fixing cartels in Gottfries and Jarosch (2026c) but there, outside firms are strictly better off, creating a stronger temptation for a cartel member to deviate. Through this lens, no-poach cartels appear to be more stable than wage-fixing cartels.

[11] This assumes that $\kappa < \frac{K-1}{K}$ which should be trivially satisfied in any relevant setting.

symmetric—as we have modeled them thus far—like in the Hollywood studios collusion; at other times, they are bilateral and organized around a central firm. The Silicon Valley no-poaching agreement took the form of three largely separate star networks, built around hubs at Adobe, Apple, and Google (Posner and Zheng, 2025). This section demonstrates that the model can naturally connect with this. Second, the resulting allocation breaks the equal profit result from the symmetric cartel which is both informative about the economics at play and has real world implications for cartel stability.

Proposition 3 (Star Network)**.** *(i) Posting. The $M-1$ non-hub firms post uniformly on $(w_1, w_u]$ at common rate ψ,*

$$F(w) = \frac{w - w_1}{s(M-2)\psi c}, \tag{15}$$

the K spokes additionally post on $[w_r, w_1]$ at rate ψ_s,

$$F_s(w) = \frac{w - w_r}{s(K-1)\psi_s c}, \tag{16}$$

and the hub posts a mass at the reservation wage w_r at rate ψ_h.

(ii) User costs and contact rates. User costs are not equalized across firms:

$$\omega = \quad w_r + c\big(\delta + s(K-1)\psi_s + s(M-2)\psi\big), \tag{17}$$

$$\omega_h = \quad w_r + c\big(\delta + s\kappa K\psi_s + s(M-1-(1-\kappa)K)\psi\big). \tag{18}$$

The hub's user-cost advantage is $cs(\psi_s+\psi)(K-1-\kappa K) > 0$, so it is larger and more profitable than every other firm.

(iii) Employment and contact rates. Spokes and outsiders share the user cost (17) and so have the common employment n; the hub, with the lower cost (18), has $n_h > n$. Employment and the contact rates are determined by the flow balances

$$u = \frac{\delta}{\delta + \psi_h + (M-1)\psi + K\psi_s}, \tag{19}$$

$$\psi_h\, u = n_h\big(\delta + s(M-1-K)\psi + s\kappa K(\psi_s+\psi)\big), \tag{20}$$

$$\delta(M-1)\, n = \big[(M-1)\psi + K\psi_s\big]u + \big(s(M-1-K)\psi + s\kappa K(\psi_s+\psi)\big)\, n_h, \tag{21}$$

together with marginal revenue product equal to user cost for each type,

$$\alpha\, p\, x\, n_h^{\alpha-1}\Big(1 - \tfrac{1}{\eta}\tfrac{n_h^\alpha}{n_h^\alpha + (M-1)n^\alpha}\Big) = \omega_h, \tag{22}$$

$$\alpha\, p\, x\, n^{\alpha-1}\Big(1 - \tfrac{1}{\eta}\tfrac{n^\alpha}{n_h^\alpha + (M-1)n^\alpha}\Big) = \omega, \tag{23}$$

where $p = \left(x[n_h^\alpha + (M-1)n^\alpha]/\bar{Q}\right)^{-1/\eta}$.

Proof sketch. The proof parallels that of Proposition 1; we highlight what is special to the hub-and-spoke case.

Non-hub firms. On the upper interval spokes and outsiders face identical competition: each is poached by the $M-2$ other non-hub firms, the hub posting only at w_r and so poaching no one. A single uniform F (15) therefore keeps them indifferent. A spoke, however, cannot poach the hub and absent anything more would be smaller than an outsider; it restores equal employment by posting the near-mass (16) on $[w_r, w_1]$. Because $w_1 - w_r = s(K-1)\psi_s c$, the spoke's user cost at w_r equals the outsider's at w_1, so the two coincide (17).

The hub. Holding K agreements, the hub loses workers only to the $M-1-K$ outsiders at full rate and to its spokes at the reduced rate κ. Its turnover is the lowest, which is exactly why it concentrates its mass at the bottom: a firm posts higher wages only to slow the poaching of its workers, and the hub—facing less competition than all other firms—has the least to gain from paying more, so it holds its entire workforce at the reservation wage w_r. The mass survives precisely because the hub is just one firm: the spokes poach each other and so spread out on an interval for the same reasons we saw the near-mass for the cartel in Proposition 1.

Unlike the symmetric cartel, hub-and-spoke cartels split the gains unevenly: the hub is larger and more profitable than every other firm, while the spokes are no better off than the outsiders. This contrasts sharply with the equal-profit result for symmetric cartels and suggests that hub-and-spoke agreements are harder to sustain absent coercion or side payments.

4 Quantitative Assessment

We calibrate the model without cartel to a representative US labor market and then assess the impact of a no-poaching agreement. Details of the calibration, including baseline parameter values, are in Appendix B.

4.1 Impact of No-Poaching Agreements

We compare the equilibrium with the cartel ($K = 2$) to the one without it ($K = 0$). All extensions re-calibrate to the same targets.

Baseline. The first column of Panel A in Table 1 reports the results for our baseline. A no-poach cartel leads to market-wide average wage losses of 4.5%. The reduction in competition compresses wages particularly steeply at cartel firms (wages drop 8.1%)

that shift most of their wage offers to the reservation wage. Remarkably, however, even wages at the non-cartel firms drop significantly (3.7%).[12] The reason is twofold. First, there is less competition since the cartel firms make fewer high-wage offers (over $(w_1, w_u]$), acting collectively like a single outside firm (modulo the porosity κ). Second, all the cartel jobs now piled up near reservation no longer constitute competition since they recruit exclusively from unemployment (or, rarely, from one another) and so churn along the job ladder is reduced, leading to a compression of wages on the interior of the wage distribution.

A different way of stating this is that, from the perspective of the outsiders, the mass of workers near reservation just look like the unemployed, they accept any of their offers. Consequently, the outsiders fill their jobs poaching each other's workers less, reducing competition. This is the key difference to a mass of workers at the bottom of the job ladder with noncompete agreements that are not available to hire, a theme we return to below.

Finally, firms expand hiring as their user cost of labor falls, leading to large increases in employment and output.

Role of product demand elasticity. The demand elasticity η mediates the extent to which the no-poach agreement shifts wages versus employment. With elastic demand ($\eta = 5$, second column), prices rise very little while employment and output expand sharply, muting the wage response. This underscores a crucial role of the product market in shaping the impact of labor market collusion: with less elastic demand, wages fall by more; with highly elastic demand, adjustment occurs primarily through rising employment.

Higher hiring costs. The third column shows that doubling the hiring cost to two months of wages amplifies the wage decline to 6.7%. Larger hiring costs make turnover more costly which exacerbates the anti-competitive effect of the cartel. This shows that no-poach agreements, even when just covering a fifth of the labor market, can lead to significant market-wide wage losses in empirically plausible settings.

Labor Market Slack. The Slack column of Table 1 entertains a high unemployment setting. We get much smaller wage losses from a no-poach cartel in the slack labor market. The reason is that the labor market features little poaching competition to begin with and so the anti-competitive impact of the cartel is smaller.

Interestingly, this stands in sharp contrast to what we find in Gottfries and Jarosch (2026c) for a wage fixing cartel. The wage fixing cartel is curtailed in how low it fixes

[12] This cautions against simple empirical difference-in-difference designs comparing workers at colluding and non-colluding firms: the control group is itself treated, which would lead to an understatement of harm.

Table 1: Impact of No-Poaching Agreements (values in percent)

Panel A: Effect of a no-poach cartel

	Baseline	$\eta = 5$	Higher c	Slack	Capital	
					$\sigma = 0.5$ labor sh. $= 2/3$	$\sigma = 0.1$ labor sh. $= 0.1$
$\Delta \log(\mathrm{E}[w])$	-4.5	-3.5	-6.7	-2.0	-4.9	-6.6
$\Delta \log(1-u)$	4.6	5.4	5.5	2.1	4.1	1.4
$\Delta \log(\text{output})$	2.9	3.5	3.5	1.3	2.2	0.5

Panel B: Comparison with noncompete agreements and wage-fixing cartels

	No-poach	Wage-fix	Noncompete
Employment share	20	20	22
$\Delta \log(\mathrm{E}[w])$	-4.7	-0.8	-0.7
$\Delta \log(1-u)$	4.7	0.8	1.4
$\Delta \log(\text{output})$	3.0	0.5	0.9

Notes: Changes relative to the no-cartel equilibrium. All columns set $K = 2$ of $M = 10$ firms. *Panel A:* baseline uses $\eta = 1.3$ and $\kappa = 0.01$; "Higher c" sets the hiring cost to two months of wages; "Capital" uses CES production with elasticity σ as in equation (24). *Panel B:* all three practices use $\kappa \to 0$ (hence the small differences from Panel A for no-poach); "Employment share" is the fraction of workers employed at affected firms; the wage-fixing ceiling is set to profit-maximize; the no-poach and wage-fix cartels are secret (workers unaware), while noncompetes are observed.

the wage by the response of the outside firms who increase hiring. That response is weakened in a slack labor market and so the cartel can act very aggressively. This suggests wage fixing cartels are more likely to arise in depressed areas (some of the most prominent US wage fixing cases affected poultry processing plants) or during recessions while no-poach agreements are more likely to arise in tight labor markets (Silicon Valley, UNC and Duke) or during booms.[13]

Capital. The final two columns of Panel A of Table 1 report results for an extended production function over labor and capital as in Gottfries and Jarosch (2026a):

$$y_i = x\left(\theta^{\frac{1}{\sigma}} n_i^{\frac{\sigma-1}{\sigma}} + (1-\theta)^{\frac{1}{\sigma}} k_i^{\frac{\sigma-1}{\sigma}}\right)^{\alpha \frac{\sigma}{\sigma-1}}. \tag{24}$$

[13] We caution that the wage fixing cartel we consider in Gottfries and Jarosch (2026c) has much broader coverage ($K = 7$) than the no-poach cartel we have considered here ($K = 2$). Such a small wage fixing cartel is weak—doing relatively little harm to workers as we will see next—and the slack-amplification mechanism is not operative.

We set $\sigma = 0.5$ and choose θ so that labor income accounts for two-thirds of factor payments in the no-cartel equilibrium. The final column reports a more constraining specification with $\sigma = 0.1$ and a 10% labor cost share.

The wage effects are amplified for the following reason: As before, the cost savings due to a no-poaching agreement yield an expansion in labor demand, benefiting workers. However, that expansion is naturally muted when the labor share is low and when the other inputs are strong complements. Consequently, the wage losses caused by the cartel are even larger. This is also reflected in the more muted expansions of employment and output reported in the table.

4.2 Horse-Race with Noncompete Agreements and Wage Fixing Cartels

The literature on anti-competitive practices in the labor market commonly distinguishes three practices: noncompete agreements (which we studied in Gottfries and Jarosch (2026a)), wage fixing cartels (which we studied in Gottfries and Jarosch (2026c)), and the no-poach agreements we studied in this paper. Since we have used a unified framework to study all three practices it is very natural to entertain a horse-race and compare the impact of the various practices on the labor market and wages in particular.

We briefly describe what the equilibrium with noncompete agreements and with a wage fixing cartel looks like: employers with noncompetes offer a wage along with a covenant prohibiting job-to-job transitions to any other employer. Workers observe and accept noncompetes, which in equilibrium require a compensating differential for the forgone option value of on-the-job search. As a consequence, the lowest acceptable wage with a noncompete w_r^{nc} exceeds w_r. Turnover at noncompete firms is independent of the wage, so they optimally post a mass of jobs at w_r^{nc} and therefore sit at the bottom of the job ladder.

The equilibrium with a wage fixing cartel has all employers at the cartel bunch at the wage ceiling which, at its profit maximizing level, strictly exceeds the reservation wage under our calibration. The reason is the aforementioned competition from the outside employers who post wages continuously right above.

To put the comparison on equal footing, we assume that in each case $K = 2$ out of $M = 10$ employers adopt the respective practice.[14]

The results are collected in Panel B of Table 1. The standout finding is that no-

[14] In addition, we take $\kappa \to 0$ for the comparison and adjust the noncompete and wage fixing versions of the model to the assumptions that workers do not receive offers from their own employers. We assume that workers are not aware of collusion (wage fixing and no-poaching) but are aware of the noncompete clause in their contracts (which means the reservation wage moves under noncompetes).

poaching agreements do far more damage to workers than the other two practices. They reduce wages six to seven times more than noncompetes and wage-fixing cartels that cover a similar share of employment.

The lower user cost of labor result in higher employment, so all three practices increase employment and output, with no-poach agreements again resulting in the largest shifts. Notably, wage-fixing and noncompetes suppress wages by almost the same amount, yet the noncompete delivers nearly double the employment and output gain which reflects that noncompetes suppress costly worker turnover while wage fixing arrangements do not.

What explains the far larger damage caused by no-poach agreements? Compared with noncompetes, they carry no compensating differential. In addition, noncompetes spur a large increase in hiring from outside firms since the workers under noncompetes are effectively removed from the market. The same is not true for no-poach agreements so we do not observe a corresponding shift in labor demand and competition.

The comparison with wage fixing cartels reflects that wage fixing carries a user cost disadvantage with the outside employers. Intuitively, these can always mimic a wage fixing cartel and so must weakly fare better. This prevents the cartel from fixing wages too aggressively since otherwise the outside firms sharply ramp up employment due to their cost advantage, driving the cartel out of the market. We thus generally find that it optimally fixes the wage far above reservation—which is where the no-poach cartel posts (almost) all its jobs—resulting in much smaller wage losses.

5 Conclusion

This paper shows how to model and analyze no-poach agreements from first principles in a simple search model that puts worker poaching in a frictional labor market center stage. As antitrust enforcement is turning increasingly toward employer conduct in the labor market, we view such a structural approach as a useful complement to the existing empirical and legal work. The same framework could also be taken to the study of mergers, information sharing, and other modern themes of labor market antitrust.

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APPENDIX

A Proofs

A.1 Proof Proposition 1, Part *(iii)*

Let $H_c(w), H_o(w)$ be employment at wages $\leq w$ at a cartel and an outsider firm. On the upper interval every worker is poached at the common rate $(w_u - w)/c$ (from $\omega = w_u + c\delta$), and each firm posts uniformly with density $1/(w_u - w_1)$, so flow balance is

$$\Big(\delta + \tfrac{w_u - w}{c}\Big) H_o'(w) = \frac{\psi_o}{w_u - w_1}\Big[u + s\big(KH_c(w) + (M - K - 1)H_o(w)\big)\Big],$$
$$\Big(\delta + \tfrac{w_u - w}{c}\Big) H_c'(w) = \frac{\psi_o/(K - \kappa(K-1))}{w_u - w_1}\Big[u + s\big(\kappa(K-1)H_c(w) + (M - K)H_o(w)\big)\Big].$$

The bracket is the measure a firm can hire: the unemployed plus those earning less at *other* firms—an outsider reaches all K cartel firms and the $M - K - 1$ other outsiders; a cartel firm reaches all $M - K$ outsiders but its $K - 1$ partners only at the porous rate κ, and never its own near-mass. Multiply the cartel line by $K - \kappa(K-1)$ and subtract the outsider line. Since $(K - \kappa(K-1))\frac{\psi_o}{K - \kappa(K-1)} = \psi_o$, the common inflow cancels and the difference $D(w) \equiv (K - \kappa(K-1))H_c(w) - H_o(w)$ obeys

$$\Big(\delta + \tfrac{w_u - w}{c}\Big) D'(w) = -\frac{s\,\psi_o}{w_u - w_1} D(w), \qquad \Longrightarrow \qquad D(w) = D(w_1)\left(\frac{\delta + (w_u - w)/c}{\delta + (w_u - w_1)/c}\right)^{\frac{s\psi_o c}{w_u - w_1}}.$$

Only cartel firms employ below w_1, so $H_o(w_1) = 0$ and $D(w_1) = (K - \kappa(K - 1))\,\frac{\psi_c u}{\delta + (w_u - w_1)/c}$. At the top, $D(w_u) = (K - \kappa(K-1))n_c - n_o$, which under $n_c = n_o = n$ equals $(K-1)(1-\kappa)\,n$. Evaluating the displayed solution at w_u (where $\delta + (w_u - w)/c = \delta$) gives (12).

A.2 Proof of Lemma 1

We prove that the highest wage is lower when a cartel is active. The user cost is given by $\omega = w_u + c\delta$ and so the result follows directly.

Suppose, to the opposite, that $w_u \geq w_u^0$. The user cost equals the top wage plus $c\delta$ in either economy ((9) and its baseline analog), so $\omega \geq \omega_0$. As the marginal revenue product—the left side of (6)—is decreasing in employment, no-poach employment is then at most the baseline level.

Towards a contradiction, note that the offer rate to the unemployed with a cartel is $\Lambda \equiv K\psi_c + (M-K)\psi_o + \frac{K}{K-\kappa(K-1)}\psi_o$. The offer rate to the unemployed in the baseline is $\frac{M}{M-1}\frac{w_u^0 - w_r}{sc} \leq \frac{M}{M-1}\frac{w_u - w_r}{sc}$.

The total poach rate at the lowest wage needs to satisfy

$$\kappa(K-1)\psi_c + \left(M-K-1+\tfrac{K}{K-\kappa(K-1)}\right)\psi_o = \tfrac{w_u - w_r}{sc}.$$

Substituting gives

$$\left[K\psi_c+(M-K)\psi_o+\tfrac{K}{K-\kappa(K-1)}\psi_o\right]-\tfrac{M}{M-1}\tfrac{w_u-w_r}{sc} = \psi_c\left[K-\tfrac{M}{M-1}\kappa(K-1)\right]+\psi_o\,\frac{K(K-1)(1-\kappa)}{(M-1)\big(K-\kappa(K-1)\big)} > 0.$$

The inequality follows from $K(M-1) > M(K-1)$.[15] Thus the total offer rate (and hence employment) is larger under the cartel than under baseline, a contradiction.

A.3 Proof of Proposition 2

Consider a baseline economy that posts uniformly on the same wage interval as the cartel economy. Then the upward mobility rate is identical and in both economies the standard relationship between cross-sectional wages and wage offer distribution is given by

$$G(w) = \frac{\delta\, F(w)}{\delta + (w_u - w)/c},$$

so G inherits any stochastic ordering of F: if cartel offers are more bottom-heavy, $F \geq F^0$, then $G \geq G^0$ and the cartel's average wage is the lower.

To see that this is the case, note that the baseline is uniform, while the offer CDF with cartel is piecewise linear. This latter lies above the baseline line when the lower interval carries a larger share of offers $K\psi_c/\Lambda$ compared with the wage range, so whenever $K\psi_c/\Lambda \geq (w_1 - w_r)/(w_u - w_r)$, which reduces to $(K-\kappa(K-1))(M-K) \geq 0$ and always holds.

The user cost is lower under the cartel (Lemma 1) and consequently is the highest

[15] When $K < M$; when $K = M$ all wages trivially equal the reservation so the wage result in the following Proposition is immediate

wage. This compounds the argument further since it means that the baseline posts uniformly on an even wider interval than we just considered.

B Calibration

The calibration follows Gottfries and Jarosch (2026a) at a monthly frequency. The discount rate is $r = 0.004$ (annual 5%). The curvature is $\alpha = 0.64$ (Cooper et al., 2007, 2015). The separation rate δ targets an unemployment rate of 6% given a job-finding rate of 25%. The relative search efficiency s targets a monthly job-to-job rate of 2.5% in a competitive market ($M \to \infty$) (Fujita et al., 2024). The hiring cost equals one month of average wages (Manning, 2011). The number of employers is $M = 10$ (HHI ≈ 1000) and $K = 2$ firms form the cartel.[16] We set $\eta = 1.3$ (Edmond et al. (2023)) and report robustness for $\eta = 5$. Finally, we pick a small value for the porosity, $\kappa = 0.01$. This results in the following parameter values: $\delta = 0.016$, $s = 0.581$, productivity $x = 0.754$, unemployment value $b = 0.828$, and demand shifter $\bar{Q} = 1.661$.

[16]Below, we contrast no-poach agreements with noncompete agreements (and wage fixing cartels). The Federal Trade Commission (FTC) states that "An estimated 30 million workers—nearly one in five Americans—are subject to a noncompete". www.ftc.gov/news-events/news/press-releases/2024/04/ftc-announces-rule-banning-noncompetes. To put the three scenarios on equal footing, we thus consider a no-poach cartel of size $K/M = 0.2$.