Managerial Poaching and Talent Reallocation*

Thomas Jungbauer† Daniela Scur‡

Fabiano Dal-Ri§ Yi Chen¶

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Abstract. Managers are an important component of positive talent reallocation: when a manager is poached, workers tend to follow. Using the universe of formal sector contracts in Brazil, we document that the co-movement of workers following a managerial poaching event is substantially larger than following a non-managerial one. We propose that managers hold high-quality personnel-specific information about workers that goes beyond what is observable to outside firms. We formalize this in a model of managerial poaching with asymmetric employer learning, in which more productive firms poach managers for their information about workers and subsequently raid high-ability employees. We derive testable predictions and show that the data supports each of them. In equilibrium, information rents lead to inefficiently low poaching, making managers both a catalyst for efficient worker reallocation and a hindrance to it reaching its welfare-optimal level.

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†SC Johnson College of Business, Cornell University: jungbauer@cornell.edu;

‡SC Johnson College of Business, Cornell University: dscur@cornell.edu;

§International Finance Corporation: fdalri@ifc.org;

¶SC Johnson College of Business, Cornell University: yi.chen@cornell.edu;

1. Introduction

Labor turnover is an important indicator of business dynamism, and thus crucial for the functioning of the economy (Decker et al., 2020), as a fluid labor market more readily allows for reallocation of workers into more productive job opportunities (Hopenhayn and Rogerson, 1993; Decker et al., 2017). A key way workers are recruited into jobs is via referral through their networks (e.g., Montgomery, 1991; Burks et al., 2015; Brown et al., 2016; Friebel et al., 2023). Evidence on referral hires suggests that these are often not based strictly on performance, however, either because the incentive behind a referral is a personal motive (Beaman and Magruder, 2012; Kramarz and Skans, 2014) or because the employee lacks high-quality information on their co-workers' productivity (Bentolila et al., 2010). Thus, while referral hires often lead to lower recruitment costs and higher retention rates, such moves do not necessarily amount to positive talent reallocation.

Managers, however, are a distinct type of worker: as their job entails supervision and evaluation of others, managers have high-quality information about the ability and aptitude of workers in their firms that goes beyond what is observable to outside firms (Becker, 1993; Lazear, 2000; Bidwell, 2011; Bandiera et al., 2020; Friedrich, 2023).[1] We propose that this *personnel-specific information* is an important reason behind why high-productivity firms poach other firms' managers, beyond simply managerial talent: to learn about the ability of the workers in the other firm and subsequently "raid" high-ability workers. If poaching is primarily done by more productive firms, this supports positive talent reallocation in the economy.[2] However, we also show that personnel-specific information affords managers what we call *information rents*, and thus limits the level of poaching below the welfare-optimal level.

In this paper, we use rich administrative data from Brazil to document a novel stylized fact that such "poach-and-raid" events are not just a feature of large corporations, but happen throughout the economy. Specifically, we show that *managerial* poaching leads to a significantly higher rate of subsequent employee hires from the same firm ("raids"), relative to events where non-managerial workers are poached. In order to

[1] Managerial incentives to recommend workers differ from those of workers: future promotion opportunities and the compensation of managers themselves depend on worker performance (*accountability*). Also, managers hold an information advantage regarding worker ability due to their involvement in supervision and evaluation (*information*). As a result, managers in the private sector—where success and tenure are dependent on performance—are likely to be more selective in their recommendations of workers than peers.

[2] In fact, managerial poaching with subsequent raids is such a common business practice that regulatory bodies such as the European Union and Federal Trade Commission issued guidelines against attempts to restrict it. See Article 101(1) EU (2016) for EU regulations and (NYT, 2024) for FTC guidelines. Further, in 2024, six leading Silicon Valley tech companies settled a lawsuit alleging wage depression through mutual no-poaching agreements for $415 million after more than 10 years of litigation (WSJ, 2014; CNET, 2024).

understand aggregate implications and rationalize this finding, we propose a formal model of managerial poaching and worker raids with asymmetric employer learning, in which firms poach managers not only for their managerial talent, but also for their potentially valuable personnel-specific information about workers.[3]

In equilibrium, more productive firms poach managers from other firms to learn about (and raid) their workers. These firms then fill vacancies or replace their own with higher-ability workers identified by their incoming manager. Our model generates three key testable predictions: first, firms are more likely to poach managers the worse their current workers (or the more vacancies they have). Second, managerial poaching induces positive talent reallocation, i.e., poaching are more productive than poached firms, and managerial poaching facilitates raids of high-ability workers. And, third, managers command information rents: the salary of a poached manager increases in the poaching firm's demand as well as the manager's expected supply of information.

Crucially, our model highlights that while managerial poaching can serve as a catalyst for efficient talent reallocation, it is inherently self-limiting. This is because a firm that is about to lose its manager takes its potential subsequent loss of high-ability workers into account when formulating a counteroffer. The resulting *information rent* managers command poses an additional cost of recruiting them, beyond wages they command because of their "regular" characteristics (such as education, experience, and ability). Thus, an important implication of our model is that, in equilibrium, this information rent leads to an inefficiently low level of aggregate poaching.

We then empirically test the predictions of our model against Brazilian labor market data. To do so, we define a poaching event as a direct move of a manager or worker from one firm to another, with no unemployment in between job spells. Between 2010 and 2016, we conservatively identify 3,374 managerial poaching events among Brazil's medium and large firms (those with more than 50 employees).[4] For each managerial poaching event, we trace the job transitions of all workers who worked in the same firm as the poached manager (the "origin firm") and classify those who moved to the same firm as the manager (the "destination firm") as raided workers.

We find that, consistent with our model, firms that poach managers (i) tend to have relatively lower-ability workers and vacancies in the period prior to the poaching event, (ii) are more productive on average, pay relatively higher wages, and raid

[3]There is a comprehensive empirical literature building on Gibbons and Katz (1991) providing support for the asymmetric employer learning hypothesis.

[4]We focus our empirical analysis on events between 2010 and 2016 and track the co-movement of employees until 2017. We use data between 2003 and 2008 to estimate worker ability and firms' wage premia using an Abowd et al. (1999) two-way fixed effect model.

workers who are of higher ability relative to market hires around the same time. We also find that (iii) poached managers' salaries are systematically correlated with the expected supply of good workers in the origin firm (proxied by firm size and average worker ability) and the expected need for workers in the destination firm (proxied by firm size), which we interpret as evidence for managerial information rents. These relationships do not generally hold in non-manager-to-manager events, suggesting managerial poaching is fundamentally different from other worker movements.

Our model and empirical findings contribute to three main literatures. First, the literature on worker flows has shown that workers referred by others tend to lead to lower recruiting costs as workers are, for example, more likely to be hired and stay longer with the firm (Montgomery, 1991; Granovetter, 1995; Dustmann et al., 2016; Barr et al., 2019) though they are not necessarily of higher ability (Burks et al., 2015; Brown et al., 2016; Prendergast and Topel, 1996). There is also evidence that managers may exert favoritism towards a group of workers (Bramoulle and Goyal, 2016), and facilitate their hiring in the new firm independent of their abilities (Bandiera et al., 2009). This is especially likely in the public sector, where the manager's payoff is less likely to be directly tied to performance (Patacchini and Mocanu, 2025). We present evidence that is consistent with managerial "referrals" in the private sector being fundamentally different from those of workers in terms of the magnitude of the "raid" and the ability of those workers. We propose that this evidence is consistent with managers having and using better personnel-specific information, while it is not consistent with simple favoritism or other non-performance-based mechanisms.

Second, our work contributes to the literature on declining business dynamism and inefficiently low turnover. A healthy level of turnover is crucial for reallocation of workers from low- to high-productivity firms and thereby for aggregate productivity (see, e.g. Hulten et al., 2001), as low turnover (or, low dynamism) leads to fewer job opportunities, worse job matches, longer unemployment spells, and lower wage growth (Akerlof et al., 1988; Hagedorn and Manovskii, 2013; Decker et al., 2017, 2020; Akcigit and Ates, 2021; Cooper et al., 2024).[5] In our model, high-productivity firms inefficiently retain low-ability workers and low-productivity firms inefficiently retain high-ability ones, leading to a negative welfare equilibrium effect.[6]

[5]A related long-standing literature discusses market failure due to adverse selection Greenwald (1986). This literature describes that better workers are more likely to stay in their jobs as new wage draws in the market are skewed towards average quality workers due to ability being hard to observe. See Waldman and Yin (2024) for a survey of this literature.

[6]The second effect is reminiscent of Ferreira and Nikolowa (2023), though their result is driven by a trade-off between poaching and talent development. Another related literature speaking to the importance of personnel-specific information for turnover rates studies talent hoarding (Friebel and Raith, 2023; He and

The information channel we describe in this paper remains relevant when firms poach teams, but the nature of personnel-specific information differs. It is well established that an important determinant of a worker's output under a specific manager is production complementarities, that is, their fit with the manager (and/or other workers) (see, e.g., Marx and Timmermans, 2017; Herkenhoff et al., 2024). Thus, when firms consider hiring teams, managers hold information on the quality of individual workers, which team members are the critical ones to hire together, and potentially also additional information that facilitates the raiding of these pivotal workers. In our framework, we consider all of these facets as part of "personnel-specific information."

We focus on hiring based on "better" personnel-specific information as a key reason behind workers moving firms following a managerial poaching event, but there could be other reasons workers co-move with their managers. We empirically assess as many alternative mechanisms as our data allows, including potential "common shocks" (such as a specific firm becoming relatively more attractive to managers and workers alike) as driving force behind the co-movement of managers and workers we observe.

Our results have important implications for how we understand the observed patterns of declining dynamism, and specifically for policy discussions regarding restrictive employment covenants such as non-compete agreements (NCAs). Our welfare analysis shows that, in equilibrium, economies are likely to have an inefficient level of poaching and raids, and this is further stifled by such covenants. While an argument for non-compete agreements (NCAs) is that they (among other things) may ensure employers invest in firm-specific human capital (Shi, 2023; Cowgill et al., 2024), they come at a significant cost as their anti-competitive nature especially precludes the efficient reallocation of managers and their personnel-specific information.[7]

2. Workers Follow Managers: Data and Context

The dataset we use is the *Relação Anual de Informações Sociais* (RAIS, 2003-2017), a linked employer-employee dataset derived from administrative records covering all

Waldman, 2024). Talent hoarding describes inefficient information sharing by managers within firms so they can retain high-ability workers within their divisions.

[7]NCAs ban parting employees from competing with their former employer for business. A related instrument, non-solicitation of employees agreements (NSEAs), avoids parting employees from soliciting other employees to leave with them. While NCAs do limit worker mobility (Cowgill et al., 2024), NSEAs are rarely taken into account by courts, are often challenged as illegal and prosecuted by government authorities themselves (DoJ, 2010), and lack enforceability. This is because "... the solicited party can always indicate that it was its choice to follow the former executive, meaning that there was no solicitation" (Azevedo, 2020). For more, see also Lipsitz and Starr (2022) focusing on low-wage workers and Balasubramanian et al. (2022) on the high-tech industry. See Starr (2023) for an overview of the regulation perspective and Starr (2026) for an overview of the economic consequences.

formal sector employment contracts in Brazil, including a workforce of over 60 million people. This is a Ministry of Labor dataset serving the purpose of administering social security programs, and all firms employing formal workers submit data (by law). Records include a worker's tax identifier, average monthly earnings, start and end date of their contract, cause of separation (including whether they were fired, quit, or were transferred between subsidiaries of the same firm), 6-digit occupation code, and education level. We deflate earnings using the Consumer Price Index for 2017. The data also records information on the contracting establishment, including its unique tax identifier, the primary industry in which it operates, and its municipality.

We use the data for three purposes: (1) identify events in which a firm hired a manager or non-manager directly into their firm from another firm (poached); (2) identify co-workers of the poached manager or non-manager in the origin firm and track their trajectories into the same destination firm (raids) or other firms; (3) estimate worker and firm fixed effects as proxies for ability and productivity using employment histories following Abowd et al. (1999), or "AKM fixed effects".[8] For the latter, we use data from 2003 to 2008 to estimate the fixed effects to avoid contamination of the estimated proxies in the analysis period. The AKM worker fixed effect captures the component of a worker's wage that is not explained by observable characteristics such as age, experience, or education. This residual is in line with the concept of personnel-specific information in our model: it is precisely the type of information about worker ability that managers hold but that is not readily available to outside firms.

2.1. **Identifying Poached Workers.** We focus on a specific set of job-to-job transitions, as we are interested in managers and workers who were likely poached from the origin firm by the destination firm rather than workers who were hired at the destination firm following an unemployment spell. To classify a poaching event, we focus on employees that (1) are employed in private firms with an average of at least about 50 employees in a 3-year period, (2) were employed in the origin firm for at least one year prior to the poaching event, (3) were hired by a different destination firm (not a different establishment of the same firm) at time $t = 0$, and (4) were formally separated from their origin firm (i.e., cannot be holding both origin firm and destination firm contracts in the same month).[9]

[8]See Appendix D for details on the estimation of worker and firm fixed effects. Figure D.1, specifically, shows the correlation between the AKM firm fixed effect and firm value added (productivity) from matched data with the Brazilian industrial survey.

[9]We focus on firms with at least 50 employees as that is the generally accepted minimum size category for medium to large firms, which account for about 60% of formal employment in the country. Smaller firms are fundamentally different in many HR functions, so we focus our analysis on this set of more comparable

For all workers satisfying these movement criteria, we further define a *managerial* poaching event when the leaving worker was a manager in the origin firm and is hired as a manager in the destination firm. The Brazilian Occupation Codes (CBO) include a classification for middle managers (the third digit in the occupation code is a "0") as well as for directors (those starting with a "1"). Our primary analysis will focus on *middle manager* movements: this is because they are the managers generally in charge of hiring and supervising employees in the establishment and have information about workers as their direct reports. To avoid overlapping events where multiple managers may be poached at the same time, we restrict our analysis to only those that are at least 25 months apart.

Between 2010 and 2016, there are 3,374 manager to manager transitions satisfying these conditions, 5,681 non-manager to manager transitions, and 67,767 non-manager to non-manager transitions. Out of the 3,374 manager to manager transitions, 1,940 transitions include at least one co-movement of employees following the event. The equivalent for non-manager to manager transitions is 2,310 (from 5,681 events), and for non-manager to non-manager, it is 22,685 (from 67,767 events).

2.2. **Identifying Raided Workers.** For each poaching event, we then identify all other workers with whom the poached worker overlapped while working at the origin firm between $t = -12$ and $t = -1$, and track their trajectories for the year following the poaching event. We classify those workers who worked with the poached employee in the origin firm and moved to the same destination firm as *raided* co-workers.[10]

2.3. **Summary Statistics.** We report summary statistics in Table D.2. The table reports the 10th percentile, median, 90th percentile, and mean values for each variable for origin and destination firms, and additionally reports the t-test of the difference in means in the last column. Origin and destination firms are significantly different from each other on average, though the median sizes of firms and establishments are qualitatively similar: about 300 employees at the firm and just under 200 at the establishment. Destination establishments are, on average, more productive (proxied by the AKM firm fixed effect, or wage premium) and tend to have more productive workers (measured by the average of the firm AKM worker fixed effects, or ability), despite being slightly smaller. Destination firms pay higher wages to their raided workers across the distribution. The average poached manager is about 38 years old,

firms. We also restrict our analysis to firms with at most 1000 employees, as coworker networks are less likely to be correctly identified in larger firms (see Caldwell and Harmon 2019). Appendix Table D.1 details the summary statistics of firms in the Brazilian formal sector by size category.

[10]We drop the top 1% of poaching events in terms of size, ranked by the number of raided co-workers, to avoid conflating poaching events with firm restructuring.

with approximately 20 years of experience and almost 4 years of tenure at the origin firm at the time of poaching.

2.4. **Stylized Fact: Workers Follow Managers.** The referrals literature suggests that workers co-move between similar establishments even when there is no connection between them, but that workers who are more likely to know each other are more likely to move to the same firm. This co-movement is attributed to referrals (c.f. Miller and Schmutte (2021) for Brazil). We document a new stylized fact that the co-movement of workers when a manager moves first is substantially higher than when an employee does, and higher than the rates reported in the referrals literature.

To explore the movement of workers between the firms of interest, we classify poaching events into three types: manager to manager, employee to employee, and employee to manager. We then focus on workers hired from the same firm as the poached manager from 6 months prior to the poaching event to 12 months after the event, and run the following specification:

$$RaidedEmployees_{et} = \alpha + \sum_{\kappa=-6}^{12} \delta_\kappa \mathbb{1}[t = \kappa] + \gamma_e + \varepsilon_{et} \tag{1}$$

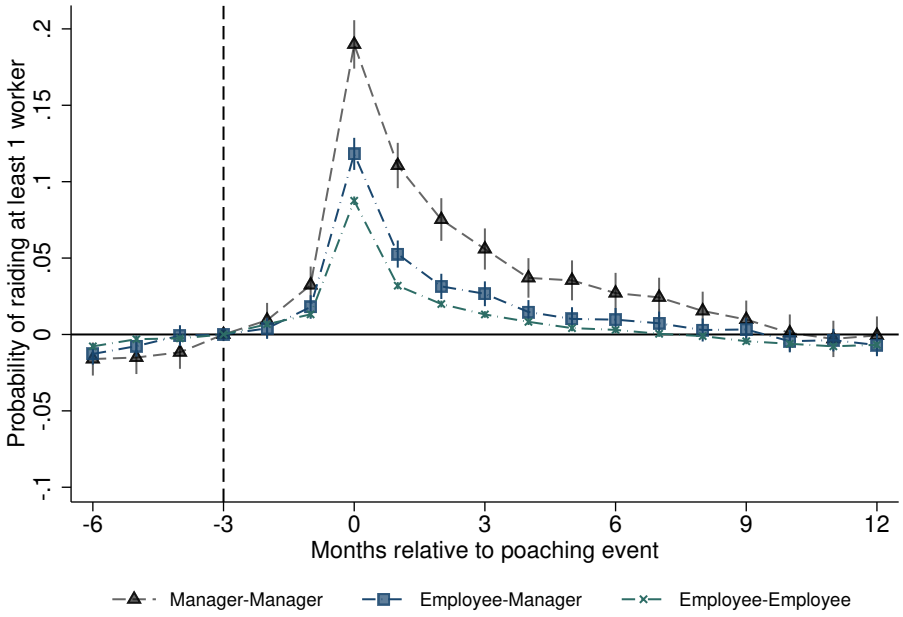
where $RaidedEmployees_{et}$ is either the share of new hires who are raided workers or the probability of having at least one raided worker in the new hires for poaching event e in relative period t. γ_e are event fixed effects. δ_κ are the coefficients of interest: each coefficient estimates the probability of raiding a worker or the difference in the share of raided workers in the set of new hires in the destination firm between time t and the baseline period $t = -3$.

Figure 1 plots the δ_κ coefficients and shows the patterns of co-movement of new hires six months prior to and 12 months following a managerial and an employee poaching event. Panel (A) shows the probability of the destination firm raiding at least one worker from the origin firm, and Panel (B) shows the share of new hires that are from the same origin firm as the poached worker. For both outcomes, we see negligible movement prior to the move, but at $t = 0$, concurrent with the poaching event, the co-movement spikes and stays at a significantly higher relative rate for at least the next 6 months when the poached worker is a manager. While there is a small uptick when an employee is poached, consistent with the referrals literature, it is significantly and substantially smaller in magnitude and much more short-lived.

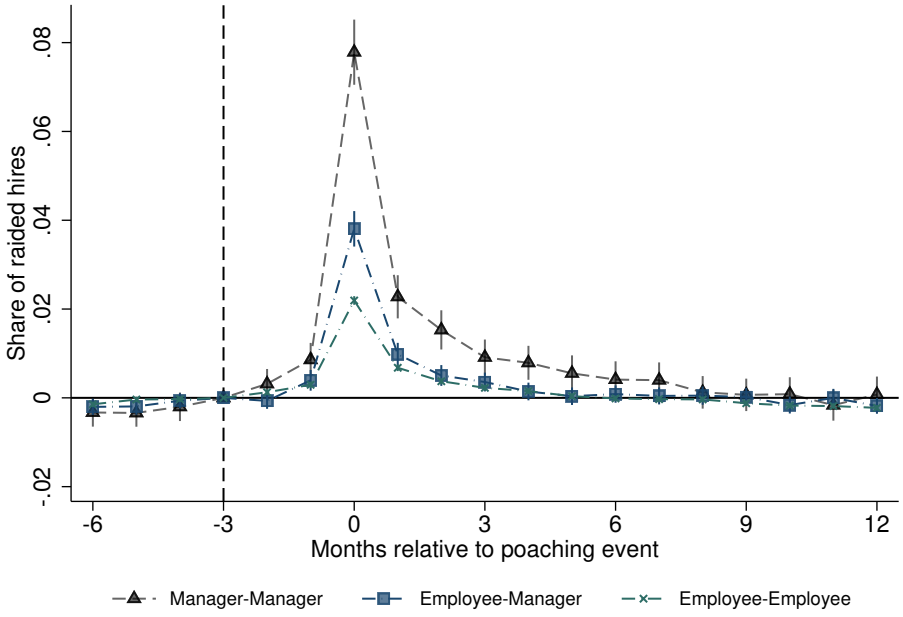
We also see this significant difference when looking across all post-poaching months relative to prior poaching months for the probability of raids, share of new hires who

FIGURE 1. Stylized fact: workers follow managers

(A) Probability of raids relative to poaching event



(B) Share of raided new hires relative to poaching event



Note: Data from RAIS, poached manager cohorts 2010-2016. This figure plots the coefficients from Equation 1 with the outcome variable as the probability that there was at least one raided worker in Panel (a) and the share of raided workers in Panel (b). Triangles denote events where a manager was poached from the origin firm and hired as a manager in the destination firm. Xs denote events where a non-manager employee was poached from the origin firm and hired as a non-manager employee at the destination firm.

are raided workers, and the number of raided workers. We document these differences by running the regression in Equation 2 with the sample of all poaching events of managers and employees. We report results for all months and also excluding the "poaching month" ($t = 0$).

$$\begin{aligned} RaidedEmployees_{det} = \alpha + \beta_1(EVT_{ee} \times Post_t) + \beta_2(EVT_{em} \times Post_t) + \\ \gamma_1 EVT_{ee} + \gamma_2 EVT_{em} + \gamma_3 Post_t + \\ \rho X_{de} + \delta_c + \mu_d + \varepsilon_{det} \end{aligned} \tag{2}$$

where $RaidedEmployees_{det}$ is one of the outcomes above for relative month t following the poaching event e at destination establishment d. X includes destination establishment d controls at the time of event e, here including the log of employment. δ_c and μ_d are calendar-month and destination establishment fixed effects. β_1 and β_2 are the coefficients of interest: each coefficient estimates the difference in each outcome variable between a manager-to-manager poaching event (reference category), an employee-to-employee event (EVT_{ee}), and an employee-to-manager (EVT_{em}) event.

Table 1 reports the results. Column (1) suggests that the probability of a poaching event resulting in at least one raided worker in any given month following the poaching event is 3.4 to 4.6 percentage points lower if the poached worker is an employee rather than a manager at the origin firm. Relative to the reference category mean of 10.6%, these suggest a poaching probability about 32 to 43 percent lower. Column (3) shows that the share of new hires who are raided is also significantly lower by about 0.8 to 1.1 percentage points in non-managerial poaching events, or 40 to 55% below the reference mean of 2%. And this is substantial: Column (5) suggests that this means 0.32 to 0.47 fewer raided workers per month, large relative to the reference mean of 0.5. Columns (2), (4) and (6) repeat the specification but exclude the $t = 0$ month, to explore the importance of "bundled" or team hiring that happens concurrent with the main poaching event. While the information channel we propose is still relevant for team hiring (managers would still hold information relevant to hire the right team), the fact that the coefficients are similar suggest that that team hiring alone cannot explain the whole difference between the incidence of employee raids following a manager-to-manager event relative to non-manager events.

Thus, the increase in raids when a manager is poached is much larger and sustains longer. The higher incidence and intensity of raids are not likely to be simply a result of hiring authority, as we observe a lower level of raids when a non-manager is poached but hired as a manager (employee-manager event). We interpret this difference as

TABLE 1. Manager poaching induces raids

	Prob >raided worker		% raided new hires		# of raided workers	
	(1) All	(2) Excl t=0	(3) All	(4) Excl t=0	(5) All	(6) Excl t=0
Reference category: manager-manager event						
Emp-mgr event=1 × Post=1	-0.034***	-0.029***	-0.008***	-0.005***	-0.325***	-0.107***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.038)	(0.021)
Emp-emp event=1 × Post=1	-0.046***	-0.039***	-0.011***	-0.007***	-0.467***	-0.138***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.035)	(0.019)
Dest. estb controls						
Establishment size (ln)	✓	✓	✓	✓	✓	✓
Fixed effects						
Destination firm	✓	✓	✓	✓	✓	✓
Calendar month	✓	✓	✓	✓	✓	✓
Mean outcome (ref)	0.106	0.098	0.020	0.017	0.504	0.309
Obs	1920550	1843728	1920550	1843728	1920550	1843728
R-Squared	0.141	0.142	0.115	0.117	0.050	0.057

Note: Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Table reports key coefficients from Equation 2, omitting the level coefficients in the second row of the equation for ease of exposition. Data from RAIS, poached worker cohorts 2010-2016. Data at the event level. Manager-manager event refers to poaching events where the employee was a manager at the origin and hired as a manager at the destination firm. Emp-mgr events are poaching events where the employee was a non-manager at the origin firm and was hired as a manager at the destination firm. Emp-emp events are poaching events where the employee was a non-manager at the origin firm and was hired as a non-manager at the destination firm. Poaching events are defined such that there are no overlapping events within 12 months prior and post of the focal event. **All** refers to all poaching events and months pre- and post- poaching. This matches the preferred specification. **Excl t=0** is the same specification but excludes the month of poaching (t=0) from the regression. **Establishment size** is the log of the number of employees in the establishment. **Mean outcome (ref)** is the mean of the outcome for each column for the reference group (manager to manager events). **Post** is an indicator that takes a value of 1 if the month is post-poaching. **Destination firm** refers to the firm the poached individual moved to, relative to the firm they were previously employed in.

evidence that managers have unique, actionable personnel-specific information that the destination firm uses to attract and hire workers from the manager's origin firm. We discuss and attempt to rule out alternative explanations in Section 6. Next, we develop a formal model to understand the causes and consequences of managerial poaching events.

3. A model of managerial poaching

In Section 3.1 below, we introduce a stylized model highlighting the role of personnel-specific information held by managers in poaching and raids. In our base model, two firms, each endowed with one managerial and one worker slot, consider whether they should try to replace their current worker (or fill vacancy) with their competitor's worker. To be able to identify this worker and learn about their ability, however, the firm has to poach their competitor's manager first.

Our equilibrium analysis in Section 3.2 finds that a firm is more likely to poach a manager for their personnel-specific information the lower the ability of its current worker (or if it has a vacancy). While our base model simplifies by assuming a single worker slot per firm, we investigate the effects of additional workers in Section 3.3. This result suggests that firms in real-world markets may be more eager to poach managers to learn about workers at other firms if their lowest-ability workers (see specifically Section 3.3.1) or workers in crucial positions are not up to their tasks.

The central finding of this section is that poached managers receive *information rents*, a salary increase reflecting how much their former employer values retaining the manager's information about high-ability workers. Poaching firms then ultimately "pay twice" to obtain a more able worker: once indirectly for the relevant personnel-specific information through the manager's salary, and once directly through the worker's wage. In the welfare part our equilibrium analysis in Section 3.2.3, we argue that managerial information rents prevent poaching from taking place at an efficient rate.

Focusing on the effects of personnel-specific information, in our base model, we assume that managers differ only in their knowledge of workers but not in their managerial abilities. In Section 3.4, we then discuss why our results generalize as long as more talented managers are weakly better at gauging workers' abilities. We also discuss the effects of team production and additional firms in Sections 3.5 and 3.6, respectively. Finally, in Appendix C, we show that our main results are robust to dynamic considerations by analyzing an infinite horizon version with overlapping generations of managers and workers as well as arbitrary numbers of worker slots.[11]

3.1. **Model set-up.** There is an industry with two firms, A and B.[12] Each firm requires two types of employees to produce. In fact, each firm i, $i \in \{A, B\}$, has a

[11] The dynamic model also produces complementary results: while poaching is not always successful, every poaching attempt increases the manager's salary, i.e., the model rationalizes raises for (valuable) retained managers. Poaching is also self-propelling, i.e., poaching today increases its likelihood tomorrow.

[12] For simplicity, when unambiguous, we refer to firm A (B) simply as A (B).

single position for a *manager* and a single slot for a *worker*.[13] Whereas managers are homogeneous in their skill, the ability of a worker, a, takes on values in $[\underline{a}, \overline{a}] \subset \mathbb{R}_+$ according to a differentiable distribution function $F(\cdot)$. When both its positions are filled, firm i's output is

$$y_i = \rho_i a_i,^{14}$$

with ρ_i denoting firm i's productivity.[15] If either one of the two positions remains vacant, the firm's output is zero. Without loss of generality, we stipulate that $\rho_A \geqslant \rho_B$, i.e., A is weakly more productive than B.[16]

At the beginning of the game, firm i, $i \in \{A, B\}$, is endowed with its present manager m_i and worker a_i. Over the course of the game, firms decide whether to retain their employees, hire their competitors' or outside replacements.[17] We refer to a manager who is retained or poached as a *senior* manager. A senior manager's outside option is s_e. Firms also have access to a pool of *junior* managers whose outside option is $s < s_e$.[18] Likewise, firms have access to a market of junior workers. Every worker's outside option is w. When hiring a new manager (worker), a firm incurs *training costs* t_m (t_w).[19] Firm i's costs then equal the sum of its manager's *salary*, its worker's *wage*, and potentially training costs, i.e.,

$$c_i^\tau = (s_i + \mathbb{1}_i^m t_m) + (w_i + \mathbb{1}_i^w t_w),$$

where $\mathbb{1}_i^m(\mathbb{1}_i^w)$ equals 1 if firm i hires a new manager (worker) and 0 otherwise.

A and B then engage in a poaching game to maximize their respective profits

$$\pi_i \equiv y_i - c_i,$$

$i \in \{A, B\}$. The timeline of events is as follows:

[13] For tractability reasons, we assume throughout this paper that managers and workers are not substitutes. This assumption specifically rules out the possibility of promotion, which is not our focus. The subsequent analysis is thus orthogonal to the promotion (see Gibbons and Waldman, 1999) and promotion signaling literature (see Waldman, 1984; Ricart i Costa, 1988) with Friedrich (2023) a more recent representative.

[14] Note that the qualitative results presented in this paper are independent of the functional form of the firm's production function as long as it satisfies increasing differences in its arguments.

[15] Throughout, a_i (m_i) refers, for simplicity, also to the worker (manager) themselves.

[16] See Syverson (2004) and Foster et al. (2008) for arguments that firms differ persistently in their respective productivities, including in their marginal products of labor.

[17] Our model naturally extends to a scenario in which a firm's worker slot is empty and retention is therefore not a viable strategy for the firm. In this case, specifying a common knowledge probability that worker slots are empty completes the model.

[18] $s_e > s$ simply reflects the higher outside option of an experienced manager.

[19] We imagine this training cost to subsume all costs specific to newly hired employees that are not transfers from the firm to the employee. Examples for such costs are moving costs, on-boarding, training, on-the-job learning, social and cultural integration, etc. In particular, modeling training costs explicitly is a natural way to account for firm-specific human capital in our setting.

(1) Firms privately learn the worker's ability.
(2) Firms decide whether to attempt to poach the other firm's manager.
(3) Firms decide whether to attempt to raid the other firm's worker.[20]
(4) Firms decide whether to retain their manager, replace them with a junior manager, or with a previously laid off one.[21]
(5) Firms decide whether to retain their worker, replace them with a junior worker, or replace them with a previously laid-off one.[22]
(6) Production takes place, firms accrue output, and pay managers/workers.

We assume firms act simultaneously at each step of the timeline. In order to simplify, we assume that (i) lay-offs are free of cost, (ii)

$$\rho_B \mathbb{E}[a] - s - t_m - w - t_w > 0, \tag{3}$$

with

$$\mathbb{E}[a] \equiv \int_{\underline{a}}^{\overline{a}} a \; dF(a),$$

so that both firms always produce, (iii) $s_e - s < t_m$ such that no firm fires senior managers to save on salary, and (iv) firms do not poach (raid) when indifferent.

When a firm attempts to poach a manager (or raid a worker), we stipulate—similar to Lazear (1986)—an offer and counteroffer process ending when one firm ceases to offer. When offers are free of cost, this gives rise to a subgame perfect equilibrium in which the firm with the larger value of hiring/retaining the manager (worker) does so at a salary (wage) that equals the other' firm's value for hiring/retaining.[23,24]

Also, suppose when a firm hires a junior worker, it initially does not know their ability, but privately learns it after production has occurred. Crucially, whenever a firm (e.g., the owner, board of directors, etc.) learns a worker's ability, so does its manager. As a consequence, if A poaches m_B, it learns a_B (and vice versa).

[20] Firm i, $i \in \{A, B\}$, can only attempt to raid its competitor's worker if it poached its manager.
[21] Note that the option to retain one's manager is only available if they were not poached by the other firm.
[22] Retaining one's worker is only feasible if they were not hired by the other firm. Hiring a recently laid-off worker is only an option if the firm hired their manager before.
[23] This offer and counteroffer process can be modeled as an ascending clock auction (see Milgrom and Weber, 1982). In an ascending clock auction, an auctioneer continuously raises the bid, i.e., salary (wage), until one firm is unwilling to pay the bid for the manager (worker) in question.
[24] If both firms simultaneously attempt poaching each other's managers (and potentially raiding each other's workers), we assume that a fair lottery determines which competition takes place first, and that offers are irrevocable. That is, if say, A makes higher offers to both managers, A retains its manager and poaches B's. As a consequence, it obtains B's manager's information about B's worker and keeps B from obtaining information about its own worker. A second manager, however, does not increase production but is paid the offered salary nevertheless. While this assumption contributes to fully specifying the game between A and B, we will show in the next section that B never attempts to poach A's manager in equilibrium.

Finally, we stipulate learning to be asymmetric, i.e., a firm is not aware of the ability (and identity) of the other firm's worker unless it poaches its manager.[25] Therefore, the poaching game described in this section is one of incomplete information. As such, our focus is on Perfect Bayesian Equilibrium (PBE) throughout. To pin down a unique PBE, we assume that whenever firms are engaged in a competition for a manager/worker, a sequential equilibrium (SE) (Kreps and Wilson, 1982) arises.[26]

3.2. **Equilibrium Analysis.** We now describe the equilibrium outcome of our base model and highlight results about manager and worker movements, their compensation, firm profits, and welfare. All qualitative results presented in this section remain valid in the infinite horizon model in Appendix C.

3.2.1. *Equilibrium behavior.* At the beginning of the poaching game, A faces three choices: (i) attempt to poach B's manager in order to potentially raid its worker, (ii) retain its current manager and worker, and (iii) retain its manager and replace its worker with a junior one. We first observe that firm i, $i \in \{A, B\}$, never opts to retain a worker of very low-ability.

Lemma 1 (**Firing**). *There is a cutoff* $a_i^F \equiv \mathbb{E}[a] - \frac{t_w}{\rho_i}$, $i \in \{A, B\}$, *such that firm* i *prefers replacing its worker* a_i *with a junior worker when* $a_i < a_i^F$.

Lemma 1 implies $a_B^F < a_A^F$, and as a result, A prefers replacing a worker $a \in [a_B^F, a_A^F]$ with a junior worker while B would opt to retain. This is because the expected value of a junior worker is higher for the more productive firm, at which every worker exhibits a higher marginal product of labor, while both firms incur training costs.

In order to characterize equilibrium behavior, we proceed by backward induction and first establish the consequences of poaching. Suppose that A has poached B's manager and therefore learned B's worker's ability a_B. At this point, the maximum wage B is willing to pay to retain a_B over replacing them with a junior worker is

$$w_R(a_B) = w + t_w + \rho_B(a_B - \mathbb{E}[a]), \tag{4}$$

which follows from equating B's profit when retaining its worker with the expected profit of a junior replacement. If $a_B < a_B^F$, B is not willing to pay a wage that exceeds

[25] In our base model we assume that A (B) can only make offers to a_B (a_A) if it hires m_B (m_A) first, thereby learning a_B's (a_A's) identity. This prevents firm A (B) from sufficiently learning about a_B (a_A) simply from engaging in a bidding contest with B (A). While this assumption is likely satisfied in many industries, it becomes irrelevant in the more realistic case of firms commanding many worker slots (see Appendix C).

[26] Technically, we assume when firms engage in offers and counteroffers, each firm believes at every instance with probability $\epsilon > 0$ that its competitor ceases to bid. We then characterize the unique PBE as $\epsilon \to 0$.

the worker's outside option w, and therefore does not retain its worker. As a result, A can raid a_B at $\max\{w, w_R(a_B)\}$. Note that if A hires a_B, their wage is independent of A's productivity but depends on a_B's ability as well as on B's productivity.

If B poached m_A to potentially raid B for a_A, B's outside option would change, affecting $w_R(\cdot)$. It turns out, however, that B never attempts to poach A's manager in equilibrium. This is because B can always hire A's laid-off manager and (possibly its) worker at the end of the recruitment process. As such, B never gains from poaching but may, in fact, lose if A poaches m_B with a higher likelihood since B's outside option improves, lowering its own retention wage when poaching A's manager.[27]

Proposition 1 (**Equilibrium behavior**). *Fix an industry* $(F, \rho_A, \rho_B, s, s_e, t_m, w, t_w)$. *In equilibrium, firm B never poaches firm A's manager m_A. There are ρ'_A and ρ''_A with $\rho_B < \rho'_A < \rho''_A$ such that*

*(1) if $\rho_A \leqslant \rho'_A$, a **no-poaching equilibrium** materializes: firm A does not poach firm B's manager. Firm i, $i \in \{A, B\}$, retains its manager m_i, and retains its worker if $a_i \geqslant a_i^F$ and replaces them with a junior worker otherwise.*

*(2) If $\rho_A > \rho'_A$, a **poaching equilibrium** materializes: there is a_P^*, and a strictly increasing function $\alpha : a \mapsto \alpha(a)$ such that firm A poaches firm B's manager if and only if $a_A < a_P^*$. It then*

(a) replaces its worker with a junior worker if $a_A < a_A^F$ and $a_B \leqslant \alpha(a_A^F)$,

(b) retains its worker if $a_A \in [a_A^F, a_P^*]$ and $a_B \leqslant \alpha(a_A)$, and

(c) raids firm B's worker if $a_B > \max\{\alpha(a_A^F), \alpha(a_A)\}$.

(3) When firm A raids firm B's worker, firm B hires a junior manager and worker if $\rho_A \in (\rho'_A, \rho''_A]$, but may hire firm A's laid off manager if $\rho_A > \rho''_A$.[28]

Proposition 1 establishes that if A and B are similarly productive, i.e., $\rho_A \leqslant \rho'_A$, there is no poaching in equilibrium. The salary that A has to pay to poach B's manager m_B in the first place reflects B's expected profit loss from A learning its worker's ability a_B. It is this *information rent*—which we discuss in detail below—that prevents A from poaching m_B in the first place if the firms are similarly productive.

[27] We flesh out the entire argument in the proof of Proposition 1.

[28] If poaching occurs in equilibrium, firm B's detailed behavior is as follows: when firm A does not hire firm B's worker, firm B hires a junior manager and replaces its worker with a junior worker if and only $a_B < a_B^F$. There is an increasing cutoff function $a_B^C(\cdot) : A \to A : a \mapsto a_B^C(a)$ such that when firm A hires firm B's worker, firm B hires a junior manager and replaces its worker with a junior worker if $\rho_A \leqslant \rho''_A$ or $\rho_A > \rho''_A$ and $a_B \leqslant a_B^C(\rho_A)$. If $\rho_A > \rho''_A$ and $a_B > a_B^C(\rho_A)$, firm B hires firm A's laid off manager m_A, replaces its worker with firm A's laid off worker if $a_A > \mathbb{E}[a]$ and replaces its worker with a junior worker otherwise. Note that for some industries $\rho''_A = \infty$.

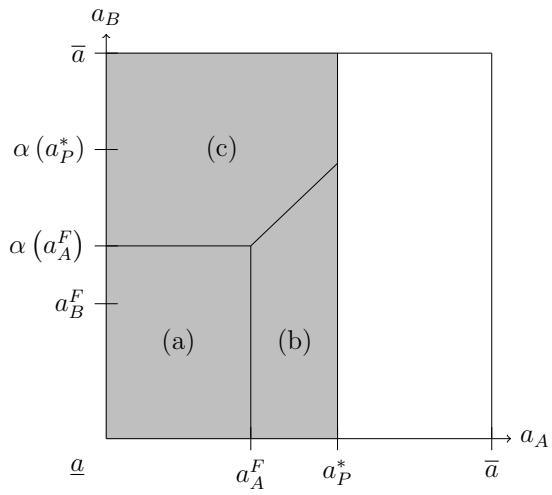


FIGURE 3. Equilibrium poaching behavior

If A is sufficiently more productive than B, i.e., $\rho_A > \rho'_A$, however, A poaches m_B in equilibrium if its own worker is of low-ability, i.e., $a_A < a_P^*$. This scenario is illustrated by the gray-shaded area in Figure 3. If A is highly productive, it is more than willing to pay for B's profit loss through both the poached manager's salary and the worker's wage. Fix A's productivity ρ_A. For high values of a_A, i.e., $a_A > a_P^*$, A never poaches m_B. This is because the likelihood that a_B sufficiently exceeds a_A to justify raiding at a higher wage is too small to warrant poaching of m_B at a higher salary.

Note that whenever A attempts to poach m_B in equilibrium, it does successfully. Since A's expectation of a_B warrants the poaching attempt in the first place, A's expectation of a_B increases as long as B does makes counter-offers for its manager.[29]

3.2.2. *Compensation.* Understanding when A poaches m_B allows us to solve for the equilibrium salaries of managers and workers' wages. As B hiring A's laid-off manager and/or worker does not qualitatively affect our results, we focus our discussion on parameters at which B always replaces its worker with a junior worker if A raids a_B, i.e., $\rho_A \in (\rho'_A, \rho''_A]$. Following the above logic, we first establish equilibrium wages.

Lemma 2 (Wages). *Fix an industry $(F, \rho_A, \rho_B, s, s_e, t_m, w, t_w)$ with $\rho_A \leqslant \rho''_A$. (1) In a no-poaching equilibrium, all workers earn w. (2) In a poaching equilibrium, likewise (a) junior workers and retained workers earn w, while (c) raided workers with ability a earn $w + t_w + \rho_B(a - \mathbb{E}[a])$.*

[29]This is not the case in the dynamic model in Appendix C, in which firms are unaware of the number of high- respectively low-ability workers employed by their competitor. As a consequence, a poaching attempt may not be successful but increase the manager's salary nevertheless.

As B never hires m_A, replacing a_B with a junior worker is B's outside option when losing its worker to A if $\rho_A < \rho''_A$. Henceforth, the equilibrium wage of a worker with ability a_B raided by firm A, $w_R(a_B)$, is given by Equation (4), and accounts for a junior worker's outside option w, worker training cost t_w, and B's expected profit loss $\rho_B(a_B - \mathbb{E}[a])$. This allows us to derive managers' equilibrium salaries.

Proposition 2 (**Salaries**). *Fix an industry* $(F, \rho_A, \rho_B, s, s_e, t_m, w, t_w)$ *with* $\rho_A \leqslant \rho''_A$. *(1) In a no-poaching equilibrium, managers earn* s_e. *(2) In a poaching equilibrium, (a) junior managers earn* s, *while (b) poached managers earn* s_P^* *ranging from* $\underline{s}_P = s + t_m$ *to* $\overline{s}^P = s + t_m + \rho_B(\overline{a} - \mathbb{E}[a]) + t_w$ *and increasing in the quality of the manager's information, i.e., in* a_B.

In a no-poaching equilibrium, firms retain their managers at a senior manager's outside option s_e, while B replaces their manager with a junior one at s in case A poaches m_B. The determination of a poached manager's salary in equilibrium,

$$s_P(a_B) = s + \underbrace{t_m + \mathbb{P}_R(a_B)\left[\rho_B(a_B - \mathbb{E}[a]) + t_w\right]}_{\text{Manager's information rent}}, \tag{5}$$

is naturally more involved. It is the highest amount that B is willing to pay to retain m_B, comprising the cost of a junior manager replacement, $s + t_m$, as well as the expected profit loss from A learning B's worker's ability a_B. This profit loss can be expressed as the product of two factors: the sum of the expected loss of output if A raids a_B, i.e., $\rho(a_B - \mathbb{E}(a))$ and worker training cost, as well as the probability of this raid taking place given a_B, which we denote by $\mathbb{P}_R(a_B)$.[30] We refer to $t_m + \mathbb{P}_R(a_B)\left[\rho_B(a_B - \mathbb{E}[a]) + t_w\right]$ as the poached manager's information rent. This information rent accounts for the manager's firm-specific human capital through t_m, and, importantly for our analysis, the manager's personnel-specific information. It is straightforward to see that the manager's information rent increases in the quality of their information, i.e., their (former) worker's ability a_B.

Proposition 2, however, describes ex-post salaries. When A decides whether to poach, it is not aware of B's worker's ability a_B. Instead, it weighs the expected benefits of poaching m_B against its cost. m_B's expected salary when poached, $\hat{s}_P$, is A's expectation of the highest salary at which B wants to retain its manager. This expected salary $\hat{s}_P$ then contributes to determinining the poaching cutoff, a_P^*. We provide formal calculations for how to determine $\hat{s}_P$ and a_P^* in Appendix B.1. Also, as A always poaches successfully, the probability of poaching is given by $\mathbb{P}_P \equiv F(a_P^*)$.

[30] Note that the probability of a raid from B's perspective is necessarily independent of A's worker a_A.

3.2.3. *Welfare.* We now consider the welfare implications of poaching in our model. It follows from Lemma 2 and Proposition 2 that firms that poach managers in order to raid high-ability workers pay an information rent. This observation allows us to derive two important sets of welfare-related results.

First, in equilibrium, A does not always gain when poaching. It does not if it poaches m_B but elects not to raid, or raids a_B for whom it would not have wanted to poach m_B in the first place. Nevertheless, A's willingness to poach when a_A exceeds a_P signals that, in expectation, A benefits from poaching. Naturally, B's profits decline while poached managers and raided workers benefit from increased salaries and wages.

Second, in expectation, poaching increases social welfare, but A does not poach often enough from an efficiency perspective. In fact, A needs to be significantly more productive than B, i.e., $\rho_A > \rho'_A$, to warrant paying an information rent. And even if A poaches with positive probability, it does not do so often enough from a welfare perspective. Let $\hat{a_P}$ denote the efficient poaching cutoff for A's worker a_A. That is to say, a planner maximizing industry profits recommends A to poach m_B whenever $a_A < \hat{a_P}$. This allows us to analyze efficient poaching.[31]

Proposition 3 (**Welfare considerations**). *Fix an industry* $(F, \rho_A, \rho_B, s, s_e, t_m, w, t_w)$ *with* $\rho_A \leqslant \rho''_A$. *Poaching, in expectation (i) increases firm A's profits, (ii) decreases firm B's profits, (iii) always benefits poached managers and raided workers, and (iv) increases social welfare, but (v) not to the efficient level, i.e.,* $a^*_P < \hat{a_P}$.

Since A benefits despite paying for all social costs that arise due to poaching in order to raid a_B, poaching increases expected social welfare. Social costs of poaching comprise B's lost production value, the managerial training costs incurred by both A and B, as well as the worker training costs incurred by the firms as a result of raids (i.e., if the firms would not have replaced their workers otherwise). Note that when A poaches, it pays for these costs either directly (training cost) or indirectly (through the manager's salary and the worker's wage) and still expects a profit increase. As a result, social welfare increases in expectation as poaching facilitates assortative matching, i.e., increases the likelihood that more able workers work for more productive firms.

The information friction that arises from asymmetric employer learning, however, causes A to not always poach when it is efficient to do so. This is because the expected equilibrium costs of the poaching firm comprise the manager's information rent. This information rent, however, is not a social cost of poaching but rather a transfer from the poaching firm to the manager. Thus, the rate of managerial poaching

[31]Note that such a planner always prevents firm B from poaching.

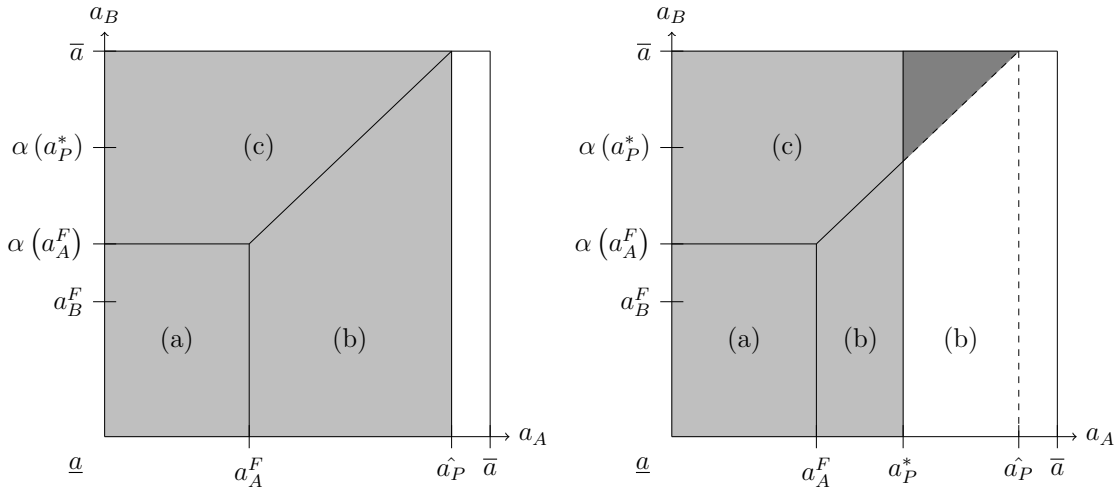


FIGURE 4. Welfare loss in equilibrium

and subsequent raids is inefficiently low. Figure 4 illustrates this logic graphically. The left-hand side depicts a hypothetical situation in which a planner recommends A to poach B's manager whenever $a_A < \hat{a_P}$. Just as in Figure 3, firm A then replaces their worker under (a), retains under (b), and raids firm B's under (c). On the right-hand side, in a poaching equilibrium, A poaches m_B if $a_A < a_P^*$. As a result, A fails to raid B's worker inefficiently in the dark-shaded triangle.

Note that, by Proposition 3, asymmetric employer learning reduces poaching rates. While some firms, depending on productivity, reduce their rate of poaching, others cease to poach managers for personnel-specific information altogether. In case a firm poaches in equilibrium, the dark-shaded triangle in Figure 4 illustrates the area in which the firm inefficiently does not due to the manager's information rent. No-poaching agreements additionally prevent poaching from taking place in region (c).

3.3. **Multiple Workers.** In this section, we explore how the number of worker slots per firm affects the rate of poaching, managerial compensation, and welfare. We analyze a 2×1 model, i.e., A has two worker slots while B has one, and a 1×2 model, i.e., A has one worker slot while B has two.[32] In particular, we lay out why and how additional worker slots increase the probability of poaching as well as the poached manager's expected salary. We focus on poaching equilibria in which B does not hire A's laid-off manager.

[32]See Proposition 7 in Appendix C reaffirming the results presented in this section in a dynamic model in which firms command arbitrary numbers of worker slots.

3.3.1. *A 2×1 model.* In this setting, B continues to have a single worker slot. Thus, its profit loss when losing its single worker remains the same as in the base model, and so does $w_R(a_B)$, the highest wage at which B is willing to retain a_B, and therefore the wage of a raided worker. Likewise, the range of poached managers' salaries remains the same.[33] Poached managers with intermediate quality information, i.e., $a_B \in (\alpha(a_A^F), \alpha(a_P)]$, however, command higher salaries as the likelihood that A raids a_B in this range increases, because A raids B's worker based on its worst rather than its single worker's ability, i.e., A's demand for information increases. These insights allow us to state the following results comparing the 2×1 with the base model.

Proposition 4 (**A 2×1 model**). *Fix an industry $(F, \rho_A, \rho_B, s, s_e, t_m, w, t_w)$ with $\rho_A \in (\rho'_A, \rho''_A] \cap (\rho'_{A(2\times1)}, \rho''_{A(2\times1)}]$.*[34] *In the poaching equilibrium,*

(1) $\hat{s}^*_{P(2\times1)} > \hat{s}^*_P$,
(2) $a^*_{P(2\times1)} < a^*_P$, *and*
(3) $\mathbb{P}_{(2\times1)} > \mathbb{P}$.

Proposition 4 (1) follows from the discussion above. Suppose $a^*_P = a^*_{P(2\times1)}$. By (1), the highest salary B is willing to pay in to retain m_B in expectation, $\hat{s}^*_{P(2\times1)}$, exceeds $\hat{s}^*_P$ (since A is more likely to raid B's worker when poaching). As a consequence, poaching becomes less attractive, causing A to adjust its poaching cutoff $a^*_{P(2\times1)}$ downwards. This makes poaching to replace a given worker less likely. Nevertheless, in equilibrium, the overall probability of poaching $\mathbb{P}_{(2\times1)} = 1-[1-F(a^*_{P(2\times1)})]^2$ always exceeds $\mathbb{P} = F(a^*_P)$. Otherwise, $\hat{s}^*_{P(2\times1)} \leqslant \hat{s}^*_P$.

3.3.2. *A 1×2 model.* Assume now that the less productive firm B has an additional worker slot. As above, B's profit ramifications of losing a worker are the same as in the base model. As a consequence, the highest wage at which B is willing to retain a worker with ability a remains $w_R(a)$. It follows that the upper and lower bounds of poached manager salaries, $\underline{s}_P$ and $\overline{s}_P$, respectively, remain the same as well. When A poaches m_B, however, its chance to learn about a highly able worker increases, because it's interested in poaching B's best rather than its single worker, i.e., the manager's supply of information increases.

Proposition 5 (**A 1×2 model**). *Fix an industry $(F, \rho_A, \rho_B, s, s_e, t_m, w, t_w)$ with $\rho_A \in (\rho'_A, \rho''_A] \cap (\rho'_{A(1\times2)}, \rho''_{A(1\times2)}]$. In the poaching equilibrium,*

(1) $\hat{s}^*_{P(1\times2)} > \hat{s}^*_P$,

[33] This is because, conditional on manager poaching, A never raids B's worker if $a_B = \underline{a}$ but always if $a_B = \overline{a}$.
[34] Throughout this section, we add $(n_A \times n_B)$ as a subscript to indicate values for an industry in which A has n_A and B n_B worker slots.

(2) $a^*_{P(1\times2)} > a^*_P$, *and*
(3) $\mathbb{P}_{(1\times2)} > \mathbb{P}$.

To understand Proposition 5, suppose that $a^*_{P(1\times2)} = a^*_P$. In this case, the probability of poaching in the 1×2 model and the base model is the same, $F(a^*_P)$. A's benefit from poaching, however, is larger since it raids B more often than in the base model, as it is more likely that one of B's workers exceeds its thresholds $\alpha(a^F_A)$ and $\alpha(a^*_P)$. This implies that $\hat{s}^*_{P(1\times2)}$ must exceed $\hat{s}^*_P$ reducing A's benefit from poaching. However, the profit loss incurred by B falls short of A's additional gain from poaching. As such, A poaches more often than in the base model. Figure B.2 in Appendix B.3 illustrates the effect of an additional worker slot at B.

In this section, we have shown that an additional slot at either firm increases the expected salary of a poached manager since A is more likely to raid B's worker(s). As A's additional benefit of poaching exceeds B's additional profit loss, the probability of poaching increases in both cases. However, the mechanisms of action are different. In case the poaching firm has an additional worker slot, i.e., a larger demand for information, its profits from poaching remain the same, but it is more likely to poach in the first place. If the poached firm has an additional worker slot, i.e., there is an increased supply of information, A's profit from poaching increases as A is more likely to learn about a highly able worker at B. Finally, while additional worker slots at both less and more productive firms increase the rate of poaching, the relative welfare loss due to asymmetric employer learning increases. This is because the manager's information rent increases in both demand for and supply of information.

3.4. **Managerial Talent.** To focus on the effect of personnel-specific information held by managers, we assume in our main model that managers only differ in their information about workers but not in their managerial skill or talent. Assume instead that firm i's manager's talent is distributed according to $G(\cdot)$ with support $[\underline{m}, \overline{m}]$, junior managers of unknown talent can be hired from the market, and that firm i's output is given by

$$y_i = \rho_i \left(m_i + a_i\right).$$

In addition, for simplicity, suppose that managerial talent is publicly observable, and the poaching game otherwise satisfies the game outlined in Section 3.1.[35]

[35]Perfect observability of a competitor's manager's talent is a constructive simplification and not necessary for the qualitative results presented in this subsection. Alternatively, the poaching firm may receive an imperfect signal about the manager's talent.

Proposition 6. *(**Managerial Talent**) Fix an industry $(F, \rho_A, \rho_B, s, s_e, t_m, w, t_w)$ with managerial talent distribution G. In equilibrium, firm B never poaches firm A's manager m_A. There is ρ'_A with $\rho_B < \rho'_A$ such that*

*(1) if $\rho_A \leqslant \rho'_A$, a **no-poaching equilibrium** materializes: firm A does not poach firm B's manager.*

*(2) If $\rho_A > \rho'_A$, a **poaching equilibrium** materializes: there is an increasing function $\mu : a \mapsto \mu(a)$ such that firm A attempts poaching B's manager if and only if $m_B - m_A > \mu(a)$. If firm A poaches firm B's manager, its rationale when to replace, retain or raid a worker is the same as in Proposition 1.*

Proposition 6 establishes equilibrium poaching behavior does not substantially differ from our base model when managers differ in managerial talent. While poached managers' salaries now also depend on their talent, they still command information rents for their knowledge about workers, causing an inefficiently low poaching rate. Firm A now, however, may poach firm B's manager m_B for their talent, their personnel-specific information, or both. The smaller A's worker's ability a_A, the more A's personnel-specific information motive for poaching matters relative to its managerial talent motive, and vice versa. In fact, if both a_A and a_B are large and A attempts poaching m_B for talent, B may outbid A to prevent losing a high-ability worker.

Suppose, in addition, talent affects a manager's ability to recognize ability in a worker, i.e., instead of the worker's ability a_B, the manager observes a signal $a_B + \varepsilon_{m_B}$, where the stochastic term ε_{m_B} follows a normal distribution with standard deviation σ_{m_B}. It is straightforward to show that our results are qualitatively robust to this specification if σ_{m_B} decreases in the manager's talent m_B. In other words, our results generalize to a scenario in which more talented managers are better at spotting a worker's ability. In this scenario, naturally, information rents increase in managerial talent.[36]

3.5. **Team Production.** Whether workers switch firms with the manager or thereafter, the manager's personnel-specific information may include knowledge about workers' fir with the manager or each other, respectively. To this end, consider the model in Section 3.4 but suppose that firm i' output is given by

$$y_i = \rho_i(m_i + a_i) + \delta(m_i, a_i),$$

where $\delta(m_i, a_i)$ is a random variable that depends on the manager's and the worker's identities and may depend on their talent and ability, respectively. Note that equilibrium behavior in this scenario closely resembles the outcomes in Section 3.4 and

[36]This setting is consistent with observations in our data as illustrated by Figure D.4 in Appendix D, suggesting that more talented managers raid higher-ability workers.

therefore Section 3.2. While a positive complementarity increases a poached manager's salary, the highest wage at which B wants to retain a_B is independent of their complementarity (as B has already lost its manager m_B).

3.6. **Competition.** Finally, consider an extension of our model in which multiple firms vie to poach a firm's manager to learn about workers. In such a setting, we expect poaching salaries to depend on the second most productive firm that decides to attempt to poach a manager from another firm. At the same time, there are more managers from more firms to poach. While poaching in this scenario likely leads to a positive reallocation of workers, increasing efficiency in the market, firms need to be sufficiently more productive than similar competitors in order to poach successfully.

4. Testable Implications

In Section 2, we document that managerial poaching leads to a significantly higher rate of subsequent employee co-movements (which we call *raids*), relative to events that see non-managerial workers being poached. Section 3 proposes and analyzes a model that offers a possible explanation for this observed pattern: managers are poached, in addition to their managerial ability, for their personnel-specific information to inform and facilitate raids. In this section, we derive testable implications from the equilibrium analysis of our model in Section 3, allowing us to take our model of managerial poaching and talent reallocation to data.

Below, we present three key implications of our model for labor markets. While some of these predictions are consistent with other labor market phenomena, we propose that no other theory accounts for their entirety as well as our model of managerial poaching for personnel-specific information.

Prediction 1. ***Firms in need of (better) workers poach managers.*** Our model proposes firms poach other firms' managers not only for their managerial talent but also for their personnel-specific information. In fact, Proposition 1 suggests that firms with low-ability workers or vacant worker slots benefit more and are thus more likely to poach another firm's manager. Proposition 6 establishes that firms poach managers both for their talent and to learn about the workers supervised. In other words, controlling for firm productivity, a firm's poaching rate decreases in the ability of their managers and workers and increases in their number of vacancies.

Prediction 2. ***Managerial poaching induces positive talent reallocation.*** This implication of our theoretical model is the combination of two results. First, Proposition 1 establishes that managers are poached by more productive firms, i.e.,

$\rho_A > \rho'_A > \rho_B$. Intuitively, the destination firm's productivity has to exceed the origin firm's to make the poaching of managers (and paying an information rent) worthwhile. Second—as established by Proposition 1 and illustrated by Figure 3—the workers raided by poaching firms are high-ability workers, in particular, their ability exceeds the expected ability of other hires from the market (junior workers) and the ability of workers they replace. Section 3.4 then argues that when managerial talent matters, the interaction of those two forces not only persists but potentially intensifies. This is because more productive firms poach more talented managers who help their new employers raid higher-ability workers.

Prediction 3. ***Poached managers command information rents.*** We propose that poached managers earn information rents that increase in the destination firm's demand for information and the manager's expected supply of information. Proposition 2 shows that poached managers' salaries exceed those of managers hired from the market (junior managers). Proposition 4 then establishes that the salary of a poached manager increases in the number of worker slots at the poaching firm, i.e., in the value of (demand for) information of the poaching firm. Likewise, it follows from Proposition 5 that a poached manager with more information commands a higher salary at the poaching firm, as more information increases the likelihood of raids. Proposition 2 also establishes that poached managers' salaries increase in the ability of raided workers, a proxy of the quality of the manager's information. This is because the origin firm's salary counteroffer reflects the worker's abilities.[37]

5. Empirical evidence

In this section, we document empirical evidence consistent with the testable implications of our model.

5.1. Evidence for Prediction 1: Firms in need of (better) workers poach managers.

Our model predicts that firms poach other firms' managers not only for their managerial talent but also for their personnel-specific information about workers. Proposition 1 suggests that firms with low-ability workers or vacant worker slots benefit more from poaching and are thus more likely to do so. We test this prediction by examining whether, among firms that actively poach workers from other firms, those that poach *managers* specifically have systematically lower-quality workforces or more vacancies prior to their poaching activity.

[37] Note that Appendix C establishes the validity of all three predictions in a dynamic environment with uncertainty and an arbitrary number of worker slots at destination and origin firms.

To explore this we consider all establishments that experienced at least one poaching event (including manager-to-manager, employee-to-employee and employee-to-manager types) between 2010 and 2016. We do this to compare across establishments that can be observed engaging in poaching and can thus be assumed to use poaching as a recruitment strategy. For each establishment, we define the outcome variable as an indicator equal to one if the establishment poached a manager (a manager-to-manager event) at any point during the sample period, and zero if it only poached non-managerial workers.

For each establishment, we average the workforce characteristics that our model suggests would push firms to poach: having lower-ability employees and managers. We operationalize this by identifying the bottom 1% and bottom 10% of employees in the within-firm worker ability distribution (as before, proxied by Abowd et al. (1999) fixed effects) in the six months strictly prior to the poaching event and taking the average of their worker fixed effects. We do the same for the bottom 10% of managers. We also construct a vacancy proxy defined as an indicator variable for whether the establishment experienced at least one separation (including both fires and quits) during this pre-event period.

We estimate the following specification:

$$MgrPoach_d = \alpha + \beta\, Workforce_d + \gamma\, FirmProductivity_d + \varepsilon_d \tag{6}$$

where $MgrPoach_d$ is an indicator equal to one if establishment d poached a manager at any point during 2010 to 2016 and zero otherwise, $Workforce_d$ is one of the pre-event workforce quality or vacancy measures described above, and $FirmProductivity_d$ is the AKM firm fixed effect, our proxy for firm productivity. Standard errors are clustered at the establishment level.

Table 2 reports the results. Columns (1) and (2) show that the average ability of an establishment's workforce is negatively correlated with the probability of managerial poaching. In Column (1), a one-unit increase in average employee ability is associated with a 2.9 percentage point lower probability of poaching a manager, relative to a baseline probability of 8.2%. Column (2) shows a negative relationship for average manager ability, though with a magnitude about half as large (-0.012).

Columns (3) and (4) sharpen this result by focusing on the bottom of the employee ability distribution. A one-unit increase in the average ability of the bottom 1% of employees is associated with an 8.9 percentage point decrease in the probability of managerial poaching, and the result is similar for the bottom 10% of employees in

TABLE 2. Probability of poaching is higher if firms need good workers

	Outcome: managerial poaching = 1					
	(1)	(2)	(3)	(4)	(5)	(6)
Avg. employee ability	−0.029***					
	(0.006)					
Avg. manager ability		−0.012***				
		(0.003)				
Avg. bottom 1% empl ability			−0.089***			
			(0.006)			
Avg. bottom 10% empl ability				−0.105***		
				(0.009)		
Avg. bottom 10% manager ability					−0.063***	
					(0.003)	
Any separation = 1						0.068***
						(0.018)
Controls						
Firm Productivity (AKM firm FE)	✓	✓	✓	✓	✓	✓
Mean dep. var.	0.082	0.082	0.082	0.082	0.082	0.082
Observations	32,828	32,828	32,828	32,828	32,828	32,828
R-squared	0.002	0.002	0.007	0.005	0.013	0.001

Note: Standard errors in parentheses, clustered at the establishment level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Data from RAIS, poached worker cohorts 2010-2016. The sample includes all establishments that experienced at least one poaching event between 2010 and 2016. The outcome variable equals one if the establishment poached a manager (manager-to-manager event) at any point during the sample period, and zero if it only poached non-managerial workers. Workforce quality measures are averaged over the six months prior to the establishment's first poaching event. Ability is the AKM worker fixed effect from Abowd et al. (1999). Firm Productivity is the AKM firm fixed effect. Employee and managerial vacancy indicators equal one if the establishment experienced at least one separation of the respective type in the three months prior to the first poaching event.

Column (4), with a slightly larger coefficient of −0.105. The two estimates are not statistically different, suggesting that the relationship is driven by the lower tail of the ability distribution broadly, rather than by a handful of extreme outliers. Column (5) shows a similar pattern for the bottom 10% of managers (−0.063). These are also statistically different from their average counterparts, suggesting that it is specifically the quality of a firm's worst workers rather than its overall workforce composition that predicts managerial poaching.

Column (6) considers the vacancy channel. Having experienced at least one separation in the months prior to the first poaching event is correlated with a 6.8 percentage-point higher probability of poaching a manager, a large effect relative to the baseline

probability of 8.2%. This is consistent with firms being more likely to poach managers when they have open positions to fill.

These results suggest that firms with lower-quality workers and recent vacancies are more likely to poach managers, consistent with our model's prediction that firms poach managers for their personnel-specific information when they need to fill positions with better workers. The workforce quality measures capture average establishment characteristics prior to the first poaching event, and thus reflect the type of establishment that engages in managerial poaching. The vacancy measure in Column (6) is more closely tied to timing, as it captures separations in the three months strictly prior to the event.

5.2. **Evidence for Prediction 2: Managerial poaching induces positive talent reallocation.** We explore whether there is evidence of positive talent reallocation following a managerial poaching event in our data by documenting the differences in productivity of origin and destination firms (proxied by the AKM firm wage premium), and the differences in the ability of raided and non-raided workers (proxied by the AKM worker fixed effect).

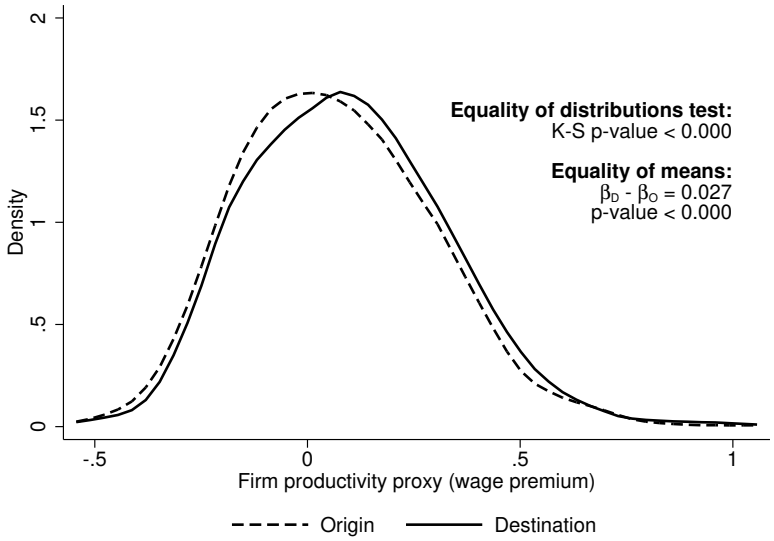
5.2.1. *Managers are poached by more productive firms.* We find that, indeed, poaching firms tend to be more productive. Figure 5 plots the kernel density function of our proxy for firm productivity, and shows that the distribution of destination firm productivity stochastically dominates that of the origin firm productivity. The Kolmogorov-Smirnov test of equality confirms the distributions are statistically different at the 1% level, and the difference in means (of 0.027) is also statistically significant.[38] As poaching firms tend to be more productive, movement of managers and workers towards these firms is part of a process of positive talent reallocation.

5.2.2. *Raided workers are of higher ability than non-raided workers.* Another important aspect of positive talent reallocation is that the more productive employees should be the ones moving to the more productive firms. To consider this, we compare raided workers to other new hires around the same period at the destination firms in our sample. We run the following regression:

$$Ability_{ie} = \alpha + \beta_1 Raided_{ie} + \zeta_1 W_{ie} + \varepsilon_{ie} \tag{7}$$

[38]Destination firms have a mean AKM fixed effect that is 0.027 higher than origin firms, suggesting a 2.7 percentage point higher wage premium.

FIGURE 5. Distribution of distribution of firm productivity



Note: Data from RAIS, poached manager cohorts 2010-2016. This figure plots the probability distribution of the Abowd et al. (1999) firm fixed effects (wage premia) for destination firms in the solid line and origin firms in the dashed line. **Poached manager** refers to an event defined as the manager engaging in a direct job-to-job transfer between two different private firms with no unemployment period in between. **Origin firm** refers to the firm the manager was originally employed in, and was poached from. **Destination firm** refers to the firm the manager moved to, relative to the firm they were previously employed in. The distributions are significantly different at the 1% level based on a Kolmogorov-Smirnov test of equality of the distributions.

where $Ability_{ie}$ is a measure of worker ability for worker i in poaching event e. $Raided_{ie}$ is an indicator for whether the new hire is a raided worker, and β_1 is the coefficient of interest. W_{ie} is a vector of control variables, here including destination firm fixed effects. We also estimate this same specification with starting wage as the outcome variable, and include 3-digit occupation fixed effects and worker experience in W_{ie}.

Table 3 reports the results. Column (1) shows that the ability of raided new hires is significantly higher than the ability of other "regular" new hires (non-raided, from the market) around the same time as the managerial poaching event. For non-managerial poaching events, there is no difference in the ability of raided new hires and non-raided new hires, regardless of whether the poached worker was hired as a manager (Column 2) or non-manager (Column 3) by the destination firm. Destination firms are still, however, valuing the raided workers at a similarly higher starting wage as non-raided workers (Columns 5-6), despite no difference in ability (Columns 2-3).

TABLE 3. Raided hires have higher ability and starting wages relative to non-raided new hires

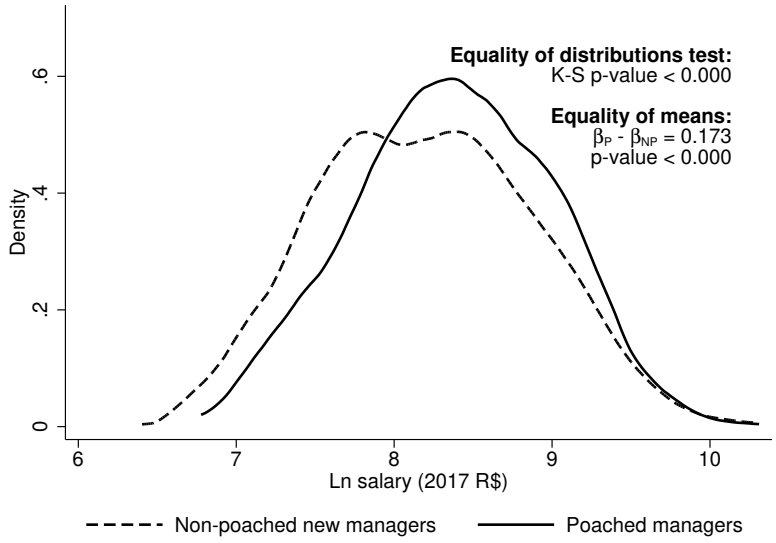
	Worker ability			Starting wage (ln)		
	(1)	(2)	(3)	(4)	(5)	(6)
Reference category: non-raided new hires						
Raided new hire	0.023***	0.008	0.004	0.053***	0.042***	0.026***
	(0.005)	(0.006)	(0.003)	(0.003)	(0.004)	(0.002)
Controls						
Destination firm FE	✓	✓	✓	✓	✓	✓
Occupation (3-digit FE)				✓	✓	✓
Worker experience (ln)				✓	✓	✓
Mean outcome (ref)	-0.163	-0.152	-0.192	7.435	7.458	7.365
Observations	44635	40208	195317	73443	66728	351147
R-Squared	0.233	0.275	0.316	0.762	0.743	0.731
Event type	Mgr-mgr	Emp-mgr	Emp-emp	Mgr-mgr	Emp-mgr	Emp-emp

Note: Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Data from RAIS, poached worker cohorts 2010-2016. **Raided workers** refers to workers from the same origin firm as the poached manager or worker, who also moved to the same destination firm. **Destination firm** refers to the firm the poached individual moved to, relative to the firm they were previously employed in. Worker experience is calculated as the age minus years of education minus 6.

Taken together, these results suggest that managerial poaching events are unique in engineering positive talent reallocation, consistent with our model in which managers have personnel-specific information that allows for this to happen. Our findings for non-managerial poaching events are also consistent with the referrals literature, which has found that the benefit from referrals is often related to lower costs of hiring (e.g., through longer tenure and higher take-up) rather than the acquisition of higher-productivity workers.

5.3. **Evidence for Prediction 3: Managers command information rents.** Managers who are poached earn substantially more than other newly hired managers at the destination firm within the same period. In Figure 6, we compare poached managers with managers hired in the same set of poaching firms who were not poached (as per the criteria in Section 2.1). The distribution of the salaries of poached managers

FIGURE 6. Poached managers earn higher starting salaries



Note: Data from RAIS, poached manager cohorts 2010-2016. Includes only new hires at destination firms following the poaching of a manager. **Poached manager** refers to managers engaging in a direct job-to-job transfer between two different private firms with no unemployment period in between. **Non-poached new managers** are all other managers hired who did not meet the poaching definition (dashed line). Manager starting salary deflated to R$ 2017. The distributions are significantly different at the 1% level based on a Kolmogorov-Smirnov test of equality of the distributions.

stochastically dominates the distribution of non-poached new managers.[39] The distributions are significantly different from each other at the 1% level, as is the difference in means (0.173).

Our theory suggests that poached managers have higher salaries as a result of a bargaining process, and we propose that these managers are extracting information rents. To consider this, we focus on the set of poached managers and explore the variation in their salaries relative to proxies of demand and supply of information. We run the following regression, iteratively adding each set of proxies for information:

[39]We do not impose that the manager must earn a strictly higher salary at the destination firm because "earnings" here can include on-the-job amenities or bonuses that might not be recorded in administrative filings. In our data, 56% of the poached managers earn a strictly higher salary in their next job. If we restrict the analysis to only those managers, our empirical results are stronger. See Appendix Figure D.3 for the cumulative distribution function.

$$\begin{aligned} lnSalary_{ie} = \alpha + & \beta_1 \ln Size_{de} + \\ & \beta_2 \ln Size_{oe} + \beta_3 AvgAbility_{oe} + \\ & \beta_5 AbilityRaid_e + \zeta_2 X_{ie} + \varepsilon_{ie} \end{aligned} \tag{8}$$

with $lnSalary_{ide}$ being the natural log of the starting salary of poached manager i in event e. $lnSize_{de}$, the natural log of destination firm size, is our proxy for destination firm demand for information (intuitively, larger firms have more available job slots to fill). Proxies for supply of information include: $lnSize_{oe}$, the natural log of the number of employees in the origin establishment o, and $AvgAbility_{oe}$, the average of the AKM fixed effect of workers in the origin establishment o. Larger origin establishments with "better" workers would, in principle, expose the manager to information on a larger number of (potentially better) workers. $AbilityRaid_e$ is the average AKM fixed effect of the raided workers who joined the destination establishment. While wage bargaining and wage setting happen prior to worker raids, we interpret this as the set of workers that the destination firm might have some reasonable expectation of being able to raid ex-post. X_{ie} is the set of controls for the poached manager: the natural log of the poached manager i's salary in the origin establishment o at the time of the poaching event e, as well as their experience and ability. We also control for the destination firm wage premium as well as the number of raided workers. ε_{ide} is an idiosyncratic error term. The βs are the coefficients of interest. Table 4 reports the results.

5.3.1. *Salary of a poached manager increases in the demand for information.* The coefficient of 0.020 in Column (1) of Table 4 implies that moving from the 25th to the 75th percentile of destination establishment size (from 95 to 376 workers) is associated with an approximately 2.8% higher salary.[40] The positive and significant relationship holds even conditional on the supply of information, and the coefficient remains similar. This is consistent with our model prediction that when firms have more slots to fill, and thus *need* more information, managers are able to extract higher rents in their negotiations.

5.3.2. *Salary of a poached manager increases in the supply of information.* Similarly, managers who can credibly claim to have more and better information should command higher information rents. We measure the amount of information in the origin firm using establishment size, average worker ability, and average ability of raided

[40]The interquartile change corresponds to $\ln(376/95) \approx 1.38$, which, when multiplied by the estimated coefficient (0.020), yields an increase of about 2.8%.

TABLE 4. Managers hold information rents: supply and demand of information

	Outcome: Manager ln(salary) at destination				
	(1)	(2)	(3)	(4)	(5)
Demand for information					
Destination establishment size (ln)	0.020**	0.035***	0.040***	0.031***	0.031***
	(0.008)	(0.008)	(0.013)	(0.010)	(0.010)
Supply of information					
Origin establishment size (ln)		0.029***	0.036***	0.026***	0.017**
		(0.007)	(0.013)	(0.009)	(0.009)
Origin avg worker ability		0.294***	0.324***	0.272***	
		(0.033)	(0.046)	(0.046)	
Ability of raided workers					0.153***
					(0.023)
Manager controls					
Manager salary at origin	✓	✓	✓	✓	✓
Manager experience	✓	✓	✓	✓	✓
Manager ability	✓	✓	✓	✓	✓
Manager origin firm wage premium	✓	✓	✓	✓	✓
Controls					
Number of raided workers		✓		✓	✓
Obs	3,022	3,022	1,320	1,702	1,702
R-Squared	0.649	0.672	0.598	0.704	0.705
Sample	All	All	No Raid	>1 Raid	>1 Raid

Note: Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Data from RAIS, poached worker cohorts 2010-2016. A poached worker refers to an event where a worker engages in a direct job-to-job transfer between two different private firms with no unemployment period in between. **Raided workers** refers to workers from the same origin establishment as the poached manager, who also moved to the same destination establishment. **Destination estb** refers to the firm/establishment the manager moved to, relative to the firm/establishment they were previously employed in (**origin estb**). **Establishment size** is the natural log of the number of employees at the time of the poaching event. Ability is the AKM worker fixed effect of the poached manager, and wage premium is the AKM firm fixed effect for the destination firm.

workers. The coefficient of 0.029 in Column (2) of Table 4 suggests that a manager moving from a 75th percentile-sized origin establishment (389) relative to one moving from a 25th percentile-sized origin establishment (104) would earn a 3.8% higher salary. Given the estimated 0.294 semi-elasticity for average worker ability, the same relative difference in worker ability (-0.26 in the 25th percentile to 0.03 in the 75th percentile) is correlated with a 8.5% higher manager salary.

Columns (3) and (4) repeat the same specification for the sub-sample of events where a manager was poached, but there were no raided workers, and those that had at least one raided worker, respectively. The coefficients are broadly similar for the two types

of events and are not statistically different. This is consistent with our theoretical model, where the salary of the poached manager is set before firms engage in employee raids.

In Column (5), we restrict the analysis only to events where there was at least one raided worker and proxy for the supply of information with the ability of raided workers. While the wage is not contracted on the workers that are successfully raided, these could be the set of workers that the manager may have plausibly argued they could facilitate access to and thus an alternative measure of their information. The 0.153 semi-elasticity implies that going from the 25th to the 75th percentile of average ability of raided workers (-0.33 to 0.11) is correlated with a 6.7% higher manager salary. We include controls for manager ability, experience and salary at the origin firm, as well as the destination firm wage premium to account for the most common correlates of standard sorting patterns.

Taken together, the results in Table 4 are consistent with a model where poached managers' value to their poaching firms includes the personnel-specific information they carry and, thus, they are able to extract "information rents" in their wage bargaining process.

6. Alternative Explanations

The literature focuses on three potential alternative explanations for the co-movement of workers with their poached managers as predicted by our model and observed in Brazil's formal sector. First, manager recommendations may resemble worker referrals, i.e., co-movement is driven by managers who refer workers in their network, neither drawing on detailed information nor being accountable for their performance. Second, the co-movement is a result of managerial favoritism towards workers for non-performance-based reasons. A third potential alternative explanation is that the poaching event is not the driver of the raids, but rather that there is an external "common shock" that drives both the manager and the workers to independently seek the move between firms. In this section, we explore these possibilities.

6.1. **Worker Referrals.**

Worker referrals are common and often encouraged by firms (Friebel et al., 2023). Consistent with the referrals literature, there is some co-movement following a poaching event, whether poached workers are hired as non-managers or managers at the destination firm. The magnitude of the co-movement of workers with other workers is, however, substantially smaller than the co-movement

of workers with their manager (see Table 1). We argue that this results from workers' lack of information and accountability when compared to managers.[41]

Specifically, an explanation of simple worker referrals would not be consistent with our results about managerial compensation (Table 4). Worker referrals convey valuable information about the match quality between a firm and worker (see, e.g., Montgomery, 1991; Granovetter, 1995; Miller and Schmutte, 2021). This information often results in productivity gains due to lower recruitment costs or lower attrition rates (Dustmann et al., 2016; Barr et al., 2019; Friebel et al., 2023) rather than superior worker ability (Burks et al., 2015; Brown et al., 2016). As a result, a theory of poaching for personnel-specific information better explains why managerial compensation increases in the ability of raided workers (Table 3), and why these are on average of superior ability.

6.2. **Non-performance-based Favoritism.** Another phenomenon that is consistent with worker raids is non-performance-based favoritism, i.e., hiring for reasons other than ability. Surplus diversion by means of favoritism may lead to distorted task assignments and hiring decisions (Bramoulle and Goyal, 2016). The ability to make idiosyncratic decisions, however, satisfies managers demanding authority and can be interpreted as a type of non-pecuniary remuneration (Prendergast and Topel, 1996). In general, in the case of favoritism, the literature suggests that raided workers are of lower ability. Patacchini and Mocanu (2025), for example, find that a reform in Brazil's public sector that reduced the discretion in government employee recruitment led to the hiring of higher-ability employees who were more likely to be promoted later on.

The best piece of evidence from our analysis that suggests our results are not consistent with favoritism is in Table 3: raided workers being of higher ability only in the set of managerial poaching events suggests that managers carry unique personnel-specific information related to worker ability and can act on this information when they have the position to do so in their new firm. In employee-to-manager events, the poached worker has a position of authority in the new firm, but lacks the information on coworker ability from their origin firm. As such, there is both a lower rate of raids when compared to manager-to-manager events (Table 1) and when the raided workers are not of notably higher ability than those that were available from the market.

Finally, the presence of both favoritism and managerial poaching for personnel-specific information conforms with Bandiera et al. (2009), who find that managers with fixed

[41]It is well documented that increasing accountability for workers through positive (Beaman and Magruder, 2012) or negative rewards (Heath, 2018) increases referral quality.

salaries are prone to hire among their social connections while performance bonuses discipline managers to hire high-ability workers. This logic is also consistent with favoritism being the driving force behind worker co-movements in the typically fixed salaried public sector (Patacchini and Mocanu, 2025), whereas in our context of the private sector the information acquired through poaching is the dominant force, as evidenced by managerial compensation being sensitive to additional worker ability.[42]

6.3. **Common Shock and firm "pipelines".** Suppose there is a "common shock" between firms that increases the poaching of all workers and their salaries, such as a foray into a new business line or a new large contract. While such a shock would not necessarily imply a spurious correlation between the poaching of a manager and the subsequent movement of other workers (that is, the positive shock could be precisely the reason the destination firm recruits managers who can facilitate raids), we provide two pieces of evidence that this alternative explanation does not drive our results.

First, Table 4 includes a control for the number of raided workers in Columns (2), (5) and (6), and the results remain similar. Second, if the destination firms in our sample are simply better firms to work for, this might appeal to both managers and workers and thus explain co-movement as well as higher wages. To consider this option, we proxy for attractiveness by calculating relative firm wage growth. We classify firms as "fast wage growth" if their wage growth is above the wage growth of the comparison region at the time of poaching.[43] If the co-movement of workers is simply an artifact of attractive firms, the result should be entirely driven by these firms. In Figure 7 we show it is not: the pattern of co-movement following a manager poaching event is similar across both slow and fast wage growth firms, for both origin and destination firm wage growth.

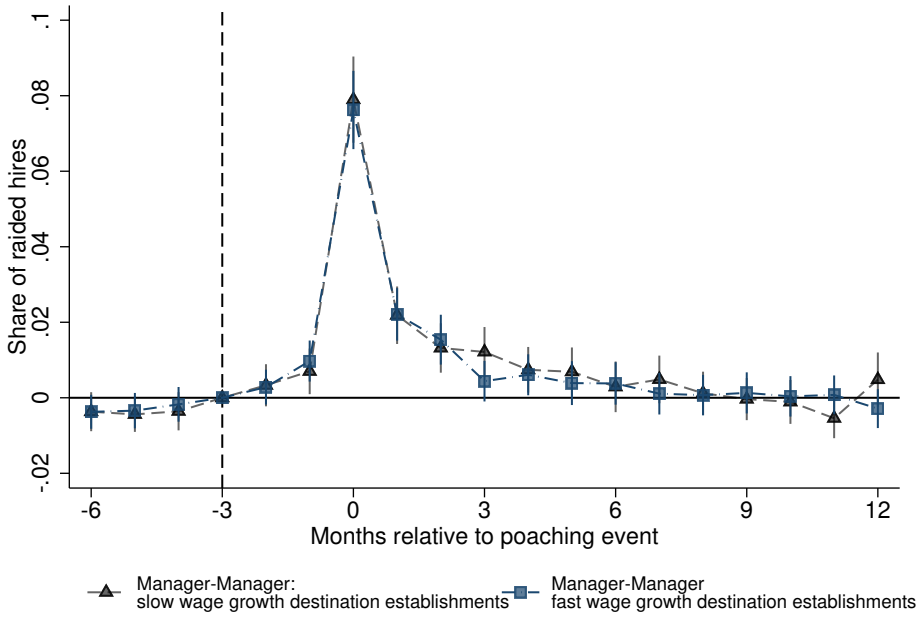
Further, our results could also reflect pre-existing hiring relationships between specific firm pairs, where some firms are consistently origin firms that could be seen as stepping stones to more desirable destination firms. We do not see evidence of such "firm pipelines." To explore this we restrict the sample to origin-destination pairs that experience both managerial and non-managerial poaching events, comparing raid intensity within the same pair (Appendix Table D.3). The difference between manager-to-manager and employee-to-employee events remains significant for

[42]For an alternative setting in which managerial information and favoritism co-exist, see Ho and Huang (2024), who investigate which workers managers recommend for promotion.

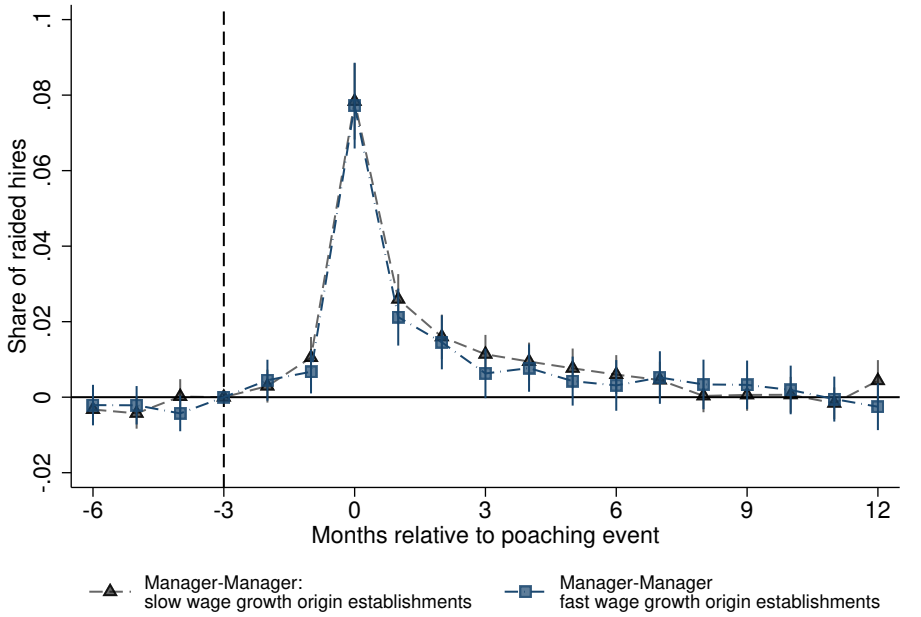
[43]We calculate wage growth as follows: for all firms in the country, we calculate the annual wage growth of each employee that works in the firm for the whole year, and take the median worker-level wage growth as the firm's wage growth. We then build a regional comparison metric, where we take the average of the firm-level wage growth of the firms in the comparison region (all other firms with more than 50 employees within the same microregion-industry (Felix, 2022)).

FIGURE 7. Alternative explanations: Common shock

(A) Destination wage growth



(B) Origin wage growth



Note: Data from RAIS, poached manager cohorts 2010-2016. This figure plots the coefficients from Equation 1 with the outcome variable as the share of raided new hires relative to all new hires in the destination firm. In Panel (a), triangles denote events where the destination firms' workers have slow wage growth, while squares denote events where the destination firms' workers have fast wage growth. Panel (b) displays the analogous results using origin firms wage growth to classify events.

the number of raided workers, though estimates are slightly less precise given the substantially smaller sample. This problem is exacerbated in the employee-to-manager sample where there are only 87 observations, though most patterns are qualitatively similar. Though it is a much smaller sample, we take this as suggestive evidence that the within-pair patterns are consistent with the information channel playing a role beyond persistent firm-pair hiring links. Also, see Appendix Figure D.2, where we show that the cumulative share of destination employees that moved from the same origin firm over the year following the poaching event increases over time.

7. Discussion

In this paper, we highlight the importance of managerial poaching for optimal personnel policies, the functioning of the economy, and labor market regulation. In a stylized model of managerial poaching and worker raids with asymmetric employer learning, high-productivity firms poach managers to potentially raid high-ability workers. Drawing on data from Brazil's formal sector from 2003 to 2017, we find that managerial poaching with subsequent worker raids is a common phenomenon. In addition, we observe—consistent with our theoretical predictions—that poaching firms tend to have relatively worse workers and more vacancies, are more productive than others, and raided workers are of higher ability than non-raided, otherwise similar, workers. Therefore, our analysis suggests that managerial poaching serves as an important catalyst for efficient worker reallocation.

We further show that the salary of a poached manager increases in the quality and quantity of their personnel-specific information, suggesting firms that are about to lose a manager take the potential subsequent loss of talent into account when making offers to their manager to remain with the firm. Therefore, it is essential for firms to evaluate the benefits of poaching a well-informed manager against the costs of successfully recruiting the manager away from their current employer.

From a market perspective, labor turnover is an important predictor of business dynamism and, therefore, the health of an economy. We argue that researchers and regulators alike need to pay special attention to managerial turnover, due to its multiplicative effect on efficient worker reallocation. Finally, our theoretical analysis suggests that reallocation through poaching is self-limiting in a setting with asymmetric employer learning. A current employer's information advantage results in information rents for poached managers, causing high-productivity firms to poach managers at inefficient rates. As a result, our findings suggest that labor market

regulation restricting the movement of managers across firms, such as non-compete or non-solicitation agreements, is even more harmful than previously thought.

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Managerial Poaching and Talent Reallocation

Yi Chen Fabiano Dal-Ri Thomas Jungbauer Daniela Scur

Appendix: For online publication

Appendix A provides formal proofs omitted from the paper, while Appendix B presents additional results and calculations pertaining to our theoretical model in Section 3. Appendix C contains our dynamic overlapping generations model, while Appendix D collects additional empirical results, often relating to robustness arguments.

A. Omitted Proofs

Note that in all proofs here and in Appendix C we invoke the sequential equilibrium refinement discussed in footnote 23 in Section 3. When, say, firm A decides to poach firm B's manager (or raids a worker), consider the highest salaries (wages) firms A and B are willing to pay, $\overline{w_A}$ and $\overline{w_B}$, and assume $\overline{w_A} > \overline{w_B}$.[44] In a sequential equilibrium, B cannot cease to bid at any $w < \overline{w_B}$ as it beliefs A may stop bidding with a small but positive probability. In this case, B strictly prefers to raise its bid.

Proof of Lemma 1: When retaining a_i, firm i's payoff π_i cannot exceed $\rho_i a_i - w - s$. Hiring a junior manager and worker accrues expected profits of $\rho_i \mathbb{E}[a] - w - s - t_w$. The claim follows. ■

Proof of Proposition 1: We first establish that B never poaches A's manager in equilibrium. Suppose first that A never poaches, but B poached m_A. Then B can raid a_A, $a_A \leqslant a_A^F$ for w since A prefers a junior replacement over a_A. Thus, from an ex ante perspective B's benefit of raiding $a_A = a_A^F$ is

$$\left(\rho_B a_A^F - w - t_w - s - t_m\right) - \left(\rho_B \mathbb{E}[a] - w - t_w - s_e\right) \tag{A.1}$$

simplifying to

$$-\frac{\rho_B}{\rho_A} t_w + (s_e - s - t_m) < 0. \tag{A.2}$$

For $a_A > a_A^F$, the additional wage A is willing to pay to retain a_A exceeds B's additional benefit. As a result, B does not poach if A does not. Now assume A poaches with positive probability. Then there must be an a_P such that A, unaware of a_B,

[44] This is always the case when firm A decides to poach/raid in Section 3 but not in the dynamic model in Appendix C. If it is not the case, the reverse argument applies.

poaches if $a_A < a_P$. Note that $a_P \geqslant a_A^F$ as otherwise A always prefers hiring a junior worker over poaching m_B to potentially raid a_B. By the analysis above, B never wants to poach if $a_A \geqslant a_P$. Now consider $a_A < a_P$, i.e., A attempts to poach. If B attempts to poach as well, in the best case scenario in which it poaches successfully, it obtains m_A for s_e (as A goes for m_B anyway). Suppose both firms poached each other's manager. Then both firms are aware of a_A and a_B, and A hires a_B under the same conditions as if A had poached and B did not. As such, B can always do equally well by hiring m_A and potentially a_A after they were laid off. Moreover, when poaching B's outside option improves if $a_A > \mathbb{E}[a]$ relative to a junior worker replacement, causing it to charge a lower retention wage than $w_R(a_B)$. As a consequence, A increases a_P as it poaches more often. As a result, B does not poach if A does.

(1) Now suppose that $\rho_A > \rho_B$ and that A has poached m_B. A's benefit from raiding a_B then maximally amounts to

$$\begin{aligned} & \rho_A a_B - t_w - w_R(a_B) - \rho_A \mathbb{E}[a] + t_w + w \\ = \quad & (\rho_A - \rho_B)(a_B - \mathbb{E}[a]) - t_w, \end{aligned} \tag{A.3}$$

which is negative for ρ_A just exceeding ρ_B. The remainder of (1) follows trivially.

(2) The highest salary at which B would retain m_B is independent of ρ_A, whereas A's benefit of raiding $a_B > \max\{a_A, \alpha\left(a_A^F\right)\}$ increases unboundedly in ρ_A. This implies that there must be an a_P^* and ρ_A' such that A poaches if $a_A < a_P^*$ and $\rho_A > \rho_A'$.

(2a) Suppose that $a_A < a_A^F$. Then raiding a_B is beneficial for A if

$$\begin{aligned} & \rho_A \mathbb{E}[a] - w - t_w \leqslant \rho_A a_B - w_R(a_B) - t_w \\ \Leftrightarrow \quad & a_B \geqslant \mathbb{E}[a] + \frac{t_w}{\rho_A - \rho_B}. \end{aligned} \tag{A.4}$$

(2b) Observe that

$$\begin{aligned} & \rho_A a_A - w = \rho_A \alpha(a_A) - w_R\left(\alpha(a_A)\right) - t_w \\ \Leftrightarrow \quad & \alpha(a_A) = \frac{1}{\rho_A - \rho_B}\left[(\rho_A a - \rho_B \mathbb{E}[a]) + 2t_w\right]. \end{aligned} \tag{A.5}$$

(2c) follows from (2a) and (2b) above.

(3) Finally, suppose that $\rho_A \to \infty$. It is straightforward that, as a result, $a_P^* \to \overline{a}$. This is because A's benefit from gaining worker ability becomes arbitrarily large while its cost is fixed. As such, if ρ_A and a_B are 'large' ($\rho_A > \rho_A''$ and $a_B > a_B^C(\rho_A)$), and A hired a_B, this implies that $a_A \in [\underline{a}, \alpha^{-1}(a_B))$ and B prefers to hire A's laid off manager m_A to learn about a_A—the differential cost of hiring m_A and a junior

manager is $s_e - s$—and hires a_A if $a_A > \mathbb{E}[a]$. Otherwise B hires a junior manager and junior worker if A poached m_B and raided a_B. ■

Proof of Lemma 2: Equation (4) establishes the highest retention wage B is willing to pay over replacing its worker with a junior one. As Proposition 1 establishes, B never poaches A's manager, and if $\rho_A \leqslant \rho''_A$, never hires A's laid off employees. ■

Proof of Proposition 2: (1) In the absence of poaching, managers are not replaced and earn s_e. In a poaching equilibrium (2a) junior replacement managers earn s, while (2b) the highest salary B is willing to pay a manager to prevent A from raiding a_B is the sum of the cost of its replacement $s + t_m$, and the value of the lost information if $a_B = \overline{a}$ accrues to $t_w + \rho_B(\overline{a} - \mathbb{E}[a])$. ■

Proof of Proposition 3: (i) to (iv) follow from the discussion above and below the statement, Lemma 2 and Proposition 2. (v) It is straightforward to establish that the poaching cost for firm A (the RHS of Equation (B.2) below) exceeds the social cost of poaching (the RHS of Equation (B.3) below) for all values of a_P^*. Since the LHSs of both equations are identical and decrease in a_P^*, respectively $\hat{a_P}$, the claim follows. ■

Proof of Proposition 4: (1) This claim follows from the argument just above the statement of the Proposition. (2) and (3) follow from the discussion below the Proposition. ■

Proof of Proposition 5: (1), (2) and (3) follow from the discussion just below the Proposition. ■

Proof of Proposition 6: First note, that if A poached m_B its optimization problem whether to replace, retain or raid is equivalent to the decision problem it faces in the scenario without managerial talent. Therefore, this Proposition generally follows from the proof of Proposition 1. It differs, however, in the following aspect:

Suppose a_A is in the vicinity of $\overline{a}$. In this case, A has no interest in raiding a_B. Nevertheless, A may poach m_B if m_B sufficiently exceeds m_A. The lower a_A, the more attractive the option value of learning about a_B, establishing that $\mu(a)$ is an increasing function.

As B does not know a_A when A attempts to poach m_B, the highest salary at which B opts to retain m_B increases in a_B. If, however, A attempted to poach (mostly) for managerial talent, it may cease to bid, and, as a result its poaching attempt may be unsuccessful. The resulting information rent implies that A only attempts poaching if $\rho_A > \rho'_A$. ■

B. Additional Theoretical Results and Calculations

B.1. **The one worker case in Section 3.2.** Note that $\hat{s}_P$,

$$\begin{aligned}\hat{s}_P(a_P) = s + t_m + & \int_{\alpha(a_A^F)}^{\alpha(a_P)} \frac{F\left(\alpha^{-1}(a)\right)}{F(a_P)} \left(w_R(a) - w\right) dF(a) \\ & + \int_{\alpha(a_P)}^{\overline{a}} \left(w_R(a) - w\right) dF(a),\end{aligned} \tag{B.1}$$

is necessarily independent of a_A as it is unknown to B. $\hat{s}_P$ reflects A's expectation over B's salary for a junior replacement manager m, their training cost t_m and B's expected loss of profit when A obtains information about a_B.

The equilibrium poaching cutoff a_P^* then equates firm A's benefits and cost of poaching,

$$\int_{\alpha(a_P^*)}^{\overline{a}} \left[\rho_A \left(a - a_P^*\right) - \left(w_R(a) - w\right) - t_w\right] dF(a) = \left(\hat{s}_P(a_P^*) - s_e\right) + t_m. \tag{B.2}$$

The efficient poaching cutoff $\hat{a_P}$, on the other hand, only takes social costs into account, i.e.,

$$\int_{\alpha(\hat{a_P})}^{\overline{a}} \left[\rho_A \left(a - \hat{a_P}\right) - \left(w_R(a) - w\right) - t_w\right] dF(a) = 2t_m - \left(s_e - s\right). \tag{B.3}$$

B.2. **The 2×1 model in Section 3.3.1.**

$$\begin{aligned}\hat{s}_p(2\times 1) = \; & s + t_m \\ & + \frac{2F(a_P)\left[1 - F(a_P)\right]}{\mathbb{P}\left(2 \times 1\right)} \int_{\alpha(a_A^F)}^{\alpha(a_P)} \frac{F\left(\alpha^{-1}(a)\right)}{F(a_P)} \left(w_R(a) - w\right) dF(a) \\ & + \frac{F(a_P)^2}{\mathbb{P}\left(2 \times 1\right)} \int_{\alpha(a_A^F)}^{\alpha(a_P)} \left[1 - \left(\frac{F(a_P) - F\left(\alpha^{-1}(a)\right)}{F(a_P)}\right)^2\right] \left(w_R(a) - w\right) dF(a) \\ & + \int_{\alpha(a_P)}^{\overline{a}} \left(w_R(a) - w\right) dF(a),\end{aligned} \tag{B.4}$$

where

$$\begin{aligned}\mathbb{P}(2\times 1) = &\quad 2F(a_P(2\times 1))\left[1-F(a_P(2\times 1))\right]+F(a_P(2\times 1))^2\\ = &\quad 2F(a_P(2\times 1))-F(a_P(2\times 1))^2.\end{aligned} \tag{B.5}$$

Then, $a_P(2\times 1)$ is determined by

$$\begin{aligned}&\int_{\alpha(a_P(2\times 1))}^{\overline{a}}\left[\rho_A\left(a-a_P(2\times 1)\right)-\left(w_R(a)-w\right)-t_w\right]dF(a)\\ = &\quad (\hat{s}_P(2\times 1)-s_e)+t_m.\end{aligned} \tag{B.6}$$

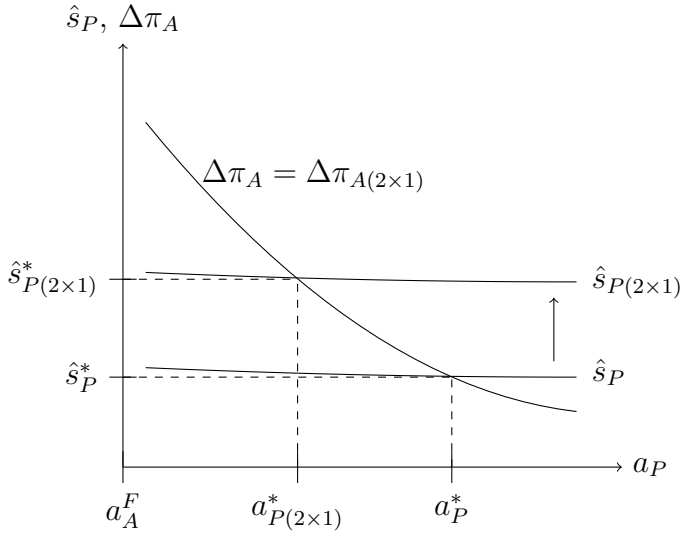


FIGURE B.1. The effect of an additional worker at firm A

B.3. **The 1×2 model in Section 3.3.2.**

$$
\begin{aligned}
\hat{s}_P(1\times 2) = \quad & s + t_m \\
& + \frac{2F(\alpha(a_A^F))\left(F(\alpha(a_P)) - F(\alpha(a_A^F))\right)}{F(\alpha(a_P)) - F(\alpha(a_A^F))} \int_{\alpha(a_A^F)}^{\alpha(a_P)} \frac{F\left(\alpha^{-1}(a)\right)}{F(a_P)} \left(w_R(a) - w\right) dF(a) \\
& + \frac{\left(F(\alpha(a_P)) - F(\alpha(a_A^F))\right)^2}{F(\alpha(a_P))^2 - F(\alpha(a_A^F))^2} \int_{\alpha(a_A^F)}^{\alpha(a_P)} \frac{F\left(\alpha^{-1}(a)\right)}{F(a_P)} \left(w_R(a) - w\right) dF(a)^2 \\
& + \frac{2F(\alpha(a_P))\left(1 - F(\alpha(a_P))\right)}{1 - F(\alpha(a_P))} \int_{\alpha(a_P)}^{\overline{a}} \left(w_R(a) - w\right) dF(a) \\
& + \frac{\left(1 - F(\alpha(a_P))\right)^2}{1 - F(\alpha(a_P))^2} \int_{\alpha(a_P)}^{\overline{a}} \left(w_R(a) - w\right) dF(a)^2.
\end{aligned}
\tag{B.7}
$$

Then, $a_P(1\times 2)$ is determined by

$$
\begin{aligned}
& \frac{\left(1 - F(\alpha(a_P))\right)^2}{1 - F(\alpha(a_P))^2} \int_{\alpha(a_P(1\times 2))}^{\overline{a}} \left[\rho_A\left(a - a_P(1\times 2)\right) - \left(w_R(a) - w\right) - t_w\right] dF(a)^2 \\
+ \quad & 2F(\alpha(a_P)) \int_{\alpha(a_P(1\times 2))}^{\overline{a}} \left[\rho_A\left(a - a_P(1\times 2)\right) - \left(w_R(a) - w\right) - t_w\right] dF(a) \\
= \quad & \left(\hat{s}_P(1\times 2) - s_e\right) + t_m.
\end{aligned}
\tag{B.8}
$$

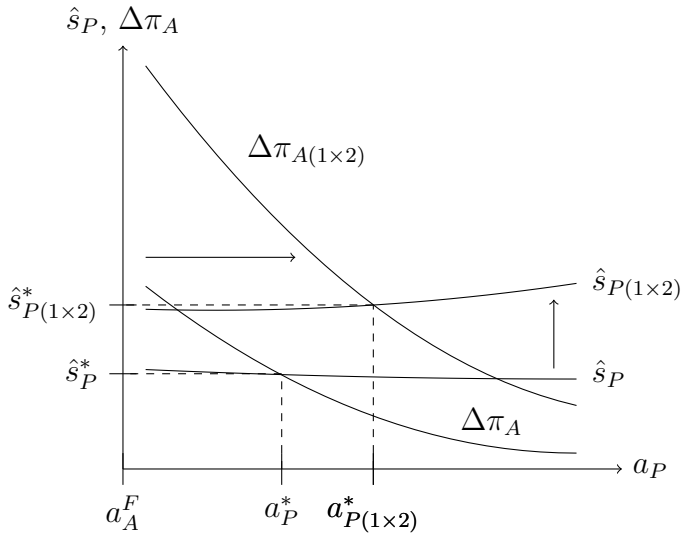


FIGURE B.2. The effect of an additional worker at firm B

C. A Dynamic Model

In this section we present and analyze a dynamic version of the model in Section 3 with (i) overlapping generations of managers and workers, (ii) arbitrary numbers of workers, and (iii) binary worker abilities, strengthening and refining our main results.

C.1. **Model setup.** Consider an infinitely repeated version of the model in Section 3 in which both firms have fixed but arbitrary numbers of worker slots, n_A and n_B respectively, and with managers and workers that live for 2 periods each. At the beginning of each period $\tau \in \mathbb{Z}$, events take place according to the time line from Section 3.

To simplify, we additionally assume throughout this section that (i) $F(\cdot)$ is binary so that a worker's ability can take on two values, a_L and a_H, with $a_H > a_L$ and $p(a_H) = p_H$, and (ii) that

$$\rho_B p_H (a_H - a_L) > t_w, \tag{C.1}$$

which ensures that both firms prefer replacing a low ability worker with a junior worker even for a single period.[45]

Finally, we introduce some additional notation for the analysis below. Let h_i^τ, $i \in \{A, B\}$, denote the number of firm i's high ability budding senior workers at the very beginning of period τ, r^τ the number of workers hired away from B by A (the 'raid')

[45]Assuming (ii) equates to ρ_B being sufficiently large. If this is not the case, no poaching equilibrium may exist. If, however, there is a poaching equilibrium the qualitative results below are unaltered.

in period τ, and $\Delta\pi_i^\tau$ firm i's change in profits if A poaches $m_B^{\tau-1}$. Moreover, we denote firm i's *ex ante* expectation—the expectation when A is making its initial offer for $m_B^{\tau-1}$—as $\mathbb{E}_i(\cdot)$, and its *interim* expectation—the expectation right after one firm ceases to offer—as $\mathbb{E}_i^I(\cdot)$. Ex post realized values simply drop the expectation.

C.2. **Equilibrium analysis.** Below we present a characterization of equilibrium behavior in the infinite horizon managerial poaching game. In the base model in Section 3, firm A when poaching pays twice for its additional production value, once through the poached manager's salary and once through the poached worker's wage. In addition it pays for the necessary training cost of all workers, either directly or through salaries/wages. In the infinite horizon model, this intuition persists. Since B is not aware of the number of A's openings, $n_A - h_A^\tau$, the highest retention salary B is willing to pay depends on its expectation thereof. As $n_A - h_A^\tau$ is the realization of a random process A may in fact pay more or less than twice, but strictly more than once, for additional production value weighted by B's productivity when attempting to poach $m_B^{\tau-1}$. As a result, there is $\delta > 0$ such that A never attempts to poach if $\rho_A - \rho_B < \delta$.

As ρ_A increases, however, and the cost of poaching B's manager and raiding B's workers remains independent of ρ_A, there must be a value ρ_A' such that A attempts to poach if it expects that poaching its manager leads to raiding some high ability workers from B. In fact, as ρ_A increases further, A always attempts to poach if $n_A - h_A^\tau \geqslant 1$ due to the enormous option value of recruiting a high ability worker. However, as long as ρ_A is moderately larger than ρ_B, A does not always succeed when it attempts to poach a budding senior manager $m_B^{\tau-1}$ at the beginning of period τ. This is because B may overestimate the number of A's openings for high ability workers and/or have a large number of budding senior high ability workers at B. Since these quantities are unknown to its competitor before a poaching attempt takes place, B may be willing to retain its manager at a higher salary than A is willing to pay. It follows that even an unsuccessful poaching attempt raises managerial salary.

It further should be noted that additional worker slots at both firms, i.e., larger values for n_A and/or n_B, increase the expected frequency of poaching as well as the expected salary paid to poached managers. This is because an additional slot at firm A makes poaching more attractive in expectation as it causes A to have more openings. This in turn increases the expected production value lost by B in the case of poaching. Due to the differences in productivities, however, A's additional profit exceeds B's loss in expectation, causing a higher probability of poaching in a given arbitrary period. Poaching itself, however, is also reaffirming as more frequent poaching makes poaching more attractive in the future as B has to replace its workers with junior

ones. Similarly, if n_B increases, A expects more high ability workers at B and the parallel argument applies. Also note that A always hires as many high ability workers as possible once it successfully poached B's manager as the poaching cost per hired worker effectively declines (because managerial training cost is split more ways).

Finally, when attempting to poach, A is more than willing to pay for all social costs (B's lost production value, additional managerial training cost, additional worker training cost) establishing that it expects its additional production value to exceed these costs. As a consequence, poaching in expectation increases social welfare as it makes the sorting of workers across firms more assortative, i.e., more able workers are employed at more productive firms. Not only does social welfare increase in expectation, but so does A's profit. B, on the other always suffers if A attempts to poach, either through higher paid salaries or lost production value. The employees poached and raided by A, on the other hand, always benefit from poaching. Nevertheless, managerial poaching does not occur at the efficient rate, as evidenced by the discussion above implying that A may not successfully poach firm B's manager even if it does have openings and firm B high ability workers.

Proposition 7 below formalizes these results.

Proposition 7 (**Infinite horizon**). *Fix an industry* $(A, F, \rho_A, n_A, \rho_B, n_B, s, s_e, t_m, w, t_w)$.[46] *In equilibrium, firm B never poaches firm A's manager $m_A^{\tau-1}$, $\tau \in \mathbb{Z}$. There is ρ'_A, $\rho'_A > \rho_B$, such that*

(1) if $\rho_A \leqslant \rho'_A$, a ***no-poaching equilibrium*** *materializes: firm A never attempts to poach firm B's manager. Firm i, $i \in \{A, B\}$, always retains its senior manager, and retains a senior worker in period τ if and only $a_i^{\tau-1} = a_H$, and replaces them with a junior worker otherwise.*

(2) If $\rho_A > \rho'_A$, a ***poaching equilibrium*** *materializes: there is $r^* \in [0, p_H \cdot \min\{n_A, n_B\}]$ such that*

(a) firm A attempts to poach firm B's manager in period τ if $m_B^{\tau-1}$ is a junior manager and $\mathbb{E}_A(r^\tau) > r^*$.

(b) Firm A does not always succeed when attempting to poach $m_B^{\tau-1}$.

(c) If firm A poaches $m_B^{\tau-1}$, it raids $\min\{n_A - h_A^\tau, h_B^\tau\}$ of firm B's workers.

(d) The average frequency of poaching increases in n_A and n_B.

(e) The expected salary of a poached manager increases in n_A and n_B, and

(f) the expected salary of a retained senior manager increases in n_A and n_B.

(g) Poaching, on average, increases social welfare, but not to the efficient level.

[46] Note that we augmented the description of an industry with the numbers of worker slots n_A and n_B.

(h) Poaching, on average, benefits firm A. It always benefits poached managers and raided workers, and harms firm B.

Proof of Proposition 7: First suppose B has poached A's manager and therefore knows the ability of A's workers. Assume $\rho_A = \rho_B$. Since retaining a worker is more valuable than raiding a worker due to t_w, B never raids a worker with ability a_H from A. Thus, B never poaches A's manager for $\rho_A \geqslant \rho_B$. The same argument, if $\rho_A - \rho_B$ is sufficiently small, i.e., $\rho_A < \rho'_A$, establishes (1).

Now assume that A has poached budding senior manager $m_B^{\tau-1}$ in period τ. Thus, A learns $a_{B,1}^{\tau-1}$ to $a_{B,n_B}^{\tau-1}$ and the workers' age. It can then raid B's budding senior workers with ability a_H at w_R. w_R represents the wage of a junior replacement, their training cost, the production value lost in τ, and dynamic costs (if a worker is poached, B hires a junior worker who then may be raided in $\tau + 1$). As all workers are equally expensive at this interim stage, A raids as many workers as it needs, $n_A - h_A^\tau$, or as it can get, h_B^τ, if $h_B^\tau < n_A - h_A^\tau$. For if not, it would never attempt to poach $m_B^{\tau-1}$ in the first place, establishing (2) (c).

A's additional production value from raiding a high ability worker over a junior replacement for one period is

$$\rho_A \left(1 - p_H\right) \left(a_H - a_L\right),$$

which is strictly increasing in ρ_A. From A's period τ perspective, if it raids a high ability worker, it can match the $\tau + 1$ production value from a junior worker hired in τ by hiring a junior worker in $\tau + 1$ incurring additional cost of t_w, which is constant in ρ_A. Moreover, the interim cost of obtaining this additional production value is $w_R - w$, which is independent of ρ_A.

The salary A has to pay when poaching $m_B^{\tau-1}$ is $s_P = s + t_m - \mathbb{E}_B^I\left(\Delta\pi_B^\tau\right)$. Note that, in general, $\mathbb{E}_B\left(\Delta\pi_B^\tau\right) \neq \mathbb{E}_B^I\left(\Delta\pi_B^\tau\right)$ because $\Delta\pi_B^\tau$ is a function of r^τ, with B's expectation of the latter potentially affected by A's offers for $m_B^{\tau-1}$. Thus, A pays twice for the additional production value from raiding a high ability worker, once through their wage w_R and once in expectation through the poached manager's salary s_P. Nevertheless, crucially observe that both w_R and s_P are independent of ρ_A.

As $\Delta\pi_A^\tau$, on the other hand, strictly increases in ρ_A, there must be a smallest ρ_A at which A attempts to poach if $\mathbb{E}_A(r^\tau) = p_H \min\{n_A, n_B\}$. Note that $p_H \min\{n_A, n_B\}$ is the maximal value $\mathbb{E}_A(r^\tau)$ can take on. This occurs when A is aware that $\min\{n_A, n_B\}$ of B's period τ workers are junior workers, and $n_A - h_A^\tau \geqslant \min\{n_A, n_B\}$.[47] It is immediate to see that if A attempts to poach when $\mathbb{E}_A\left(r^\tau\right) = r$, then it attempts

[47] This is the case if A raided enough high ability workers from B in period $\tau - 1$.

to poach whenever $\mathbb{E}_A(r^\tau) > r$ and that r^* decreases in ρ_A. This establishes the existence of ρ'_A together with (2)(a).

Suppose now that in period τ, $r^* < \mathbb{E}_A(r^\tau) < \mathbb{E}_B(r^\tau)$ and that $\mathbb{E}_B(r^\tau) - \mathbb{E}_A(r^\tau)$ is large. This may be the case because $n_A - h_A^\tau$ is small while h_B^τ is large. Then, A may cease to offer before B does, and B retains $m_B^{\tau-1}$, proving (2) (b).

Consider $\hat{s}_P$, the expected salary of a poached manager,

$$\mathbb{E}(s_P) = s + t_m - \mathbb{E}\left[\left(\mathbb{E}_B^I\left(\Delta\pi_B^\tau\right)\right]\right., \tag{C.2}$$

with $\mathbb{E}$ denoting the expectation over all $\tau \in \mathbb{Z}$. Note that $\mathbb{E}_B^I\left(\Delta\pi_B^\tau\right)$ directly decreases in n_A because $\mathbb{E}_B^I(n_A - h_A^\tau)$ increases B's expected profit loss, but by less than it increases A's expected profit gain due to $\rho_A > \rho'_A$. As such, the probability of poaching in a given period increases. A higher probability of poaching then decreases, in expectation $h_A^{\tau+1}$ and increases $h_B^{\tau+1}$. As a result, both the direct and indirect effects of n_A on $\hat{s}_P$ and the likelihood of poaching are positive. A similar argument establishes the same for n_B. (2) (d) and (e) follow. Also, if A attempts to poach $m_B^{\tau-1}$ unsuccessfully, then $s(m_B^\tau) > s_e$ and (2) (f) follows.

The social cost of poaching comprises four components. (i) If A poaches, both firms incur a managerial training cost t_m, and (ii) both firms incur a worker training cost t_w per raided worker instead of only firm A when replacing its worker with a junior one. (iii) B expects to lose production value in τ by replacing a high ability with a junior worker. (iv) If A poaches in period τ, B has a budding senior manager again in the beginning of period $\tau + 1$. As such, poaching makes future poaching more likely increasing the frequency of costs (i), (ii) and (iii) to arise. However, when A attempts to poach, it expects its additional profit from poaching to exceed $2t_m + r^\tau t_w$ as it transfers $t_m + r^\tau t_w$ to $m_B^{\tau-1}$, t_w to each worker, and chooses to poach over retaining $m_A^{\tau-1}$ (if applicable) and hiring a junior worker incurring another t_m. In addition it transfers B's production value loss to the workers it raids. As a consequence, A expects its additional profit from poaching to exceed the sum of (i), (ii) and (iii) when poaching. Finally, (iv) if the frequency of these poaching costs increases, so does the frequency of the benefits at the same rate. Poached managers and raided workers earn more than their retained counterparts but poaching does not always occur if it is efficient. This establishes (2) (g) and (h). ■

D. Additional Empirical Results

D.1. **Measuring worker ability and firm wage premium.** We measure worker ability and firm wage premium following the Abowd et al. (1999) (AKM) two-way fixed effect decomposition. This model decomposes wages into the firm-specific and worker-specific "wage premia," such that a higher firm fixed effect indicates that the firm tends to pay higher wages relative to others. Correspondingly, a higher worker fixed effect indicates that a particular worker tends to earn higher wages relative to other workers in the firms they work at. This worker fixed effect is often interpreted as the value of portable skills workers take with them, or as a proxy of worker ability.[48]

To estimate this, we run the following model:

$$\ln w_{it} = \alpha + x_{it}\beta + \eta_{Y(i,t)} + \theta_i + \varepsilon_{it}, \tag{D.1}$$

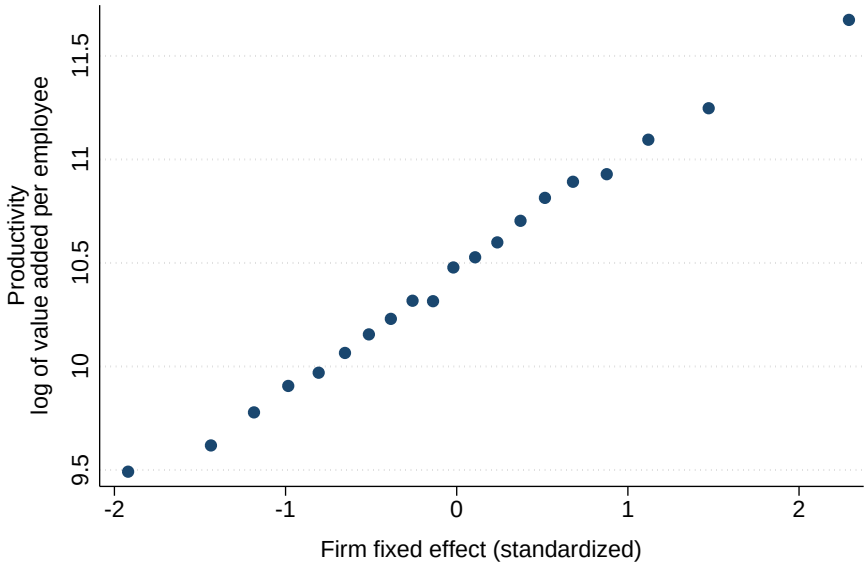
with dependent variable w_{it}, the real wage of worker i in year t. $Y(i,t)$ captures the place of employment for worker i at time t. $\eta_{Y(i,t)}$ captures the establishment "wage premium." The θ_i captures worker ability, as described above. This estimation controls for year effects and a normalized cubic function in age interacted with race and gender in x_{it}.[49] For this estimation, we use data from 2003 to 2008, building proxies of ability and wage premium that predate the poaching and raid events we study in this paper.[50]

[48] There is an active debate in this literature on whether the worker fixed effect metric measures "ability." For example, there is an argument that because the relationship between AKM worker effects and productive traits is theoretically unclear (Eeckhout and Kircher, 2011), the term "quality" may be a more accurate description of the metric (Cornwell et al., 2021). Since no term is without contention, we use *ability* reflecting that workers with higher worker fixed effects are better paid, thus assuming that well-functioning private sector markets lead firms to pay higher wages to higher ability workers. As higher-ability workers are likely to make firms more productive, the positive correlation between higher worker AKM fixed effects and firm productivity lends credibility to this assumption (see Figure 1 in Cornwell et al. (2021) and Figure 3 in Bender et al. (2018)). Further, Cornwell et al. (2021) document a strong positive correlation between the firm fixed effect and value added in Brazil, suggesting it is a good proxy for firm productivity.

[49] We normalize the experience profile to be flat at 20 years of experience, as per Card et al. (2018).

[50] This model rests on an assumption of exogenous mobility, while our theoretical framework discusses a case of endogenous mobility. Using the universe of job transitions in 2003-2008 helps because we are using transitions that are expected to be exogenous relative to our specific focal events.

FIGURE D.1. Productivity proxy: correlation between firm productivity and Firm AKM wage premium in Brazil



Note: Data from RAIS and PIA (*Pesquisa Industrial Anual* – Annual Industrial Survey, from the Brazilian Statistics Agency). Data is from the manufacturing sector only. This graph was generated and cleared under the project for Cornwell et al. (2021), though the graph did not make it into the final paper. Nonetheless, that is its provenance. PIA and RAIS data for this graph are from 2013, the same year as the first wave of the World Management Survey data for Brazil.

TABLE D.1. Summary of firm size in the Brazilian formal sector

Size category	1-5	6-10	11-20	21-50	50+
Number of people employed	4,998,001	3,626,883	4,131,962	5,394,015	28,146,028
Number of firms	2,296,508	479,185	285,344	174,041	107,401
Average wage	1,098.05	1,332.27	1,492.72	1,663.79	2,073.23
% female	46.09	42.84	42.11	39.90	37.55
% non-white	31.86	34.14	35.11	36.78	40.23
% of college educated	5.59	7.61	9.79	11.68	14.53

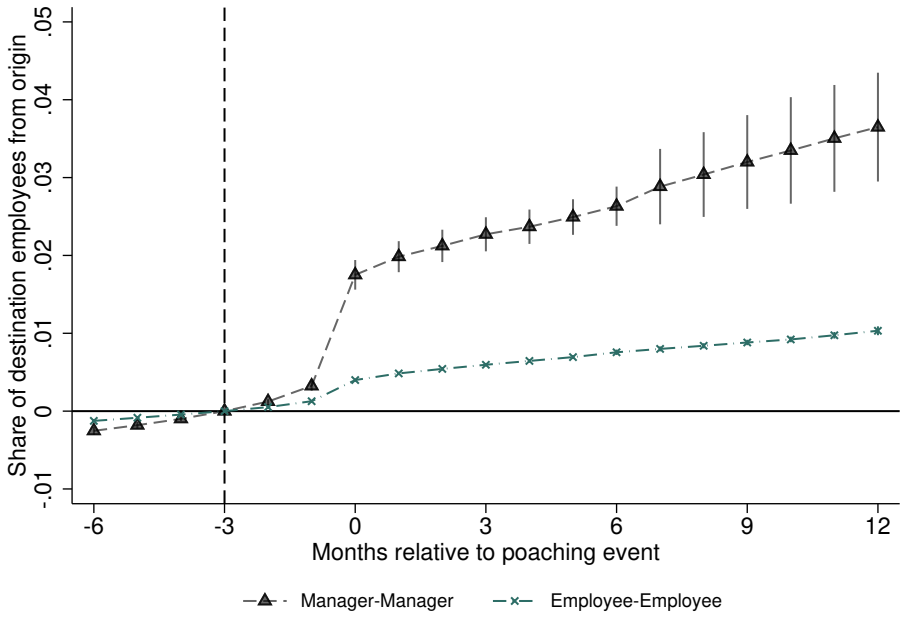
Note: Data from RAIS for example year 2013. Includes all firms in the dataset, and presents the total number of firms and people employed in firms within each size category: 1-5 employees, 6-10 employees, 11-20 employees, 21-50 employees, and 50+ employees.

TABLE D.2. Summary statistics of origin and destination firms and poached managers

	25th pct		Median		75th pct		Mean			
	Origin	Destination	Origin	Destination	Origin	Destination	Origin	Destination	Diff	N
Firm variables										
Productivity proxy (firm AKM FE)	-0.09	-0.07	0.07	0.09	0.23	0.26	0.08	0.10	0.03***	3013
Avg. worker ability (worker AKM FE)	-0.26	-0.23	-0.13	-0.09	0.03	0.09	-0.08	-0.02	0.06***	3374
Firm size (# workers), mean last 3 years	133	123	311	301	820	792	1942	1464	-478***	3374
# establishments	1	1	1	1	5	5	12	10	-1	3374
Establishment size (# workers), mean last 3 years	104.00	94.67	196.50	183.00	388.67	376.33	279.69	270.16	-9.53*	3374
Raided workers wage (2017 BRL)	1398.23	1528.51	1928.64	2194.44	2901.07	3340.50	2609.38	2988.53	379.15***	1595
Raided workers ability (AKM FE)		-0.33		-0.14		0.11		-0.06		
Manager variables										
Salary (2017 BRL)	2607.03	2888.85	4198.58	4590.93	6833.75	7087.23	5477.85	5438.58	-39.27	3374
Age	31.00		36.00		43.00		37.71			
Experience (years)	11.00		18.00		26.00		19.60			
Tenure (months)	20.00		33.00		58.00		46.72			
Ability (worker AKM FE)	-0.11		0.26		0.73		0.33			
Workers variables										
Age	32.26	32.28	34.71	34.68	37.22	37.15	34.77	34.71	-0.06	3374
Experience (years)	14.44	14.33	17.75	17.45	21.47	21.10	18.07	17.78	-0.29**	3374
Tenure (months)	16.44	15.36	27.33	26.05	42.29	41.83	32.66	32.34	-0.32	3374
Avg. establishment wage growth (1yr)	0.03	0.03	0.06	0.07	0.10	0.11	0.07	0.07	0.00**	3228

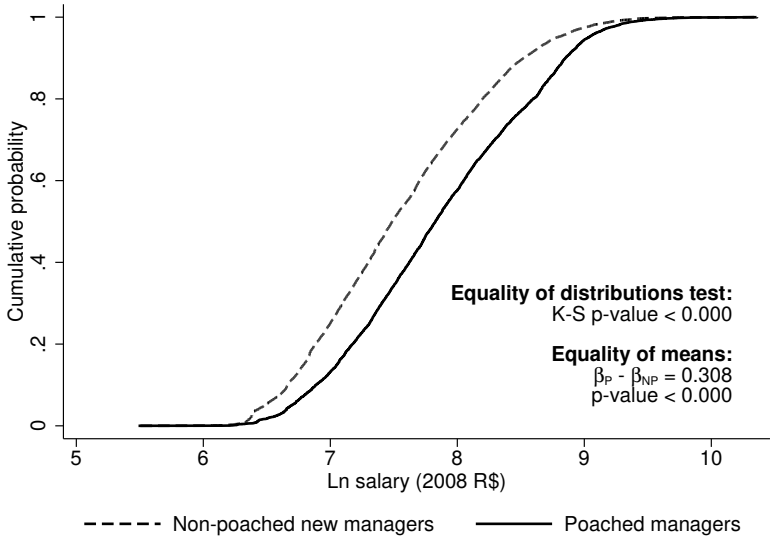
Note: Data from RAIS, poached manager cohorts 2010-2016. **Poached manager** refers to an event defined as the manager engaging in a direct job-to-job transfer between two different private firms with no unemployment period in between. **Origin firm** refers to the firm the manager was originally employed in and was poached from. **Destination firm** refers to the firm the manager moved to, relative to the firm they were previously employed in. **Productivity proxy** is the firm wage premium, estimated using Abowd et al. (1999) two-way fixed effects. RAIS does not have productivity information, but Cornwell et al. (2021) linked RAIS with the Brazilian annual census of manufacturers and showed that there is a strong correlation between firm productivity and the wage premium. **Avg. worker ability** is the average worker wage premium of workers in the establishment, also estimated using Abowd et al. (1999) two-way fixed effects. **Firm size** is the number of workers in the establishment. **Raided workers' wage** is the average wage of the newly hired raided workers in the destination firm, in 2017 BRL. **Age** is the manager's age in years at the time of poaching, and **experience** is the poached manager's total years of experience in the labor force (estimated as age − years of education − 6). **Ability** is the poached manager's worker fixed effect from Abowd et al. (1999).

FIGURE D.2. Co-movement of workers following a poaching event (share of origin employees over time)



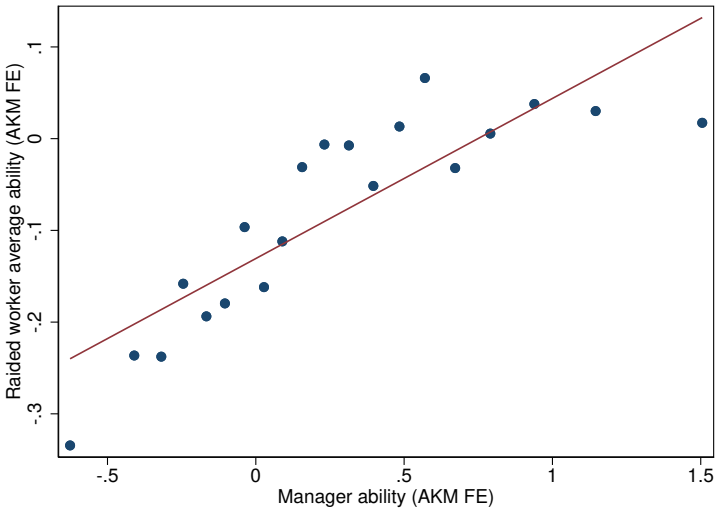
Note: Data from RAIS, poached manager cohorts 2010-2016. This figure plots the coefficients from Equation 1 with the outcome variable as the cumulative share of workers in the destination firm hired from the same origin firm. Triangles denote events where a manager was poached from the origin firm and hired as a manager in the destination firm. Xs denote events where a non-manager employee was poached from the origin firm and hired as a non-manager employee at the destination firm.

FIGURE D.3. Cumulative distribution of manager starting salary at destination firm



Note: Data from RAIS, poached manager cohorts 2010-2016. Includes only new hires at destination firms following the poaching of a manager. Poached managers refer to managers who are poached based on the definition in Section 2.1 (solid line), and non-poached managers are all other managers hired who did not meet the poaching definition (dashed line). Manager starting salary deflated to R$ 2017. The distributions are significantly different at the 1% level based on a Kolmogorov-Smirnov test of equality of the distributions.

FIGURE D.4. Manager ability and average raided worker ability



Note: Data from RAIS, poached manager cohorts 2010-2016. Includes only events where there was at least one raided worker. Average raided worker ability is the average AKM fixed effect of raided workers in the event. Manager ability is the poached manager's AKM fixed effect. AKM fixed effects are from the two-way fixed effect decomposition in Abowd et al. (1999). The binned scatterplot includes controls for destination firm wage premium (a proxy for productivity), log of destination establishment size, destination firm employment growth, origin establishment size, and log of number of raided workers.

TABLE D.3. Manager poaching induces raids: robustness checks

	Prob >raided worker		% raided new hires		# of raided workers	
	(1) All	(2) O-D pair	(3) All	(4) O-D pair	(5) All	(6) O-D pair
Reference category: manager-manager event						
Emp-mgr event=1 × Post=1	-0.034***	-0.002	-0.008***	-0.005	-0.325***	-0.305
	(0.002)	(0.018)	(0.001)	(0.006)	(0.038)	(0.242)
Emp-emp event=1 × Post=1	-0.046***	-0.020**	-0.011***	-0.008*	-0.467***	-0.500***
	(0.002)	(0.010)	(0.001)	(0.004)	(0.035)	(0.161)
Dest. estb controls						
Estb size	✓	✓	✓	✓	✓	✓
Fixed Effects						
Calendar-month FE	✓	✓	✓	✓	✓	✓
O-D pair FE	✓	✓	✓	✓	✓	✓
Mean outcome (ref)	0.106	0.252	0.020	0.061	0.504	1.151
Obs	1920550	26150	1920550	26150	1920550	26150
R-Squared	0.206	0.249	0.150	0.172	0.070	0.091

Note: Data from RAIS, poached manager cohorts 2010-2016. Data at the event level. Manager-manager event refers to poaching events where the employee was a manager at the origin and hired as a manager at the destination firm. Emp-mgr events are poaching events where the employee was a non-manager at the origin firm and was hired as a manager at the destination firm. Emp-emp events are poaching events where the employee was a non-manager at the origin firm and was hired as a non-manager at the destination firm. Poaching events are defined such that there are no overlapping events within 12 months prior and post of the focal event. **All** refers to all poaching events and months pre- and post- poaching. This matches the preferred specification. **O-D pairs** is the same specification but includes only events for which there is at least one other emp-mgr or emp-emp event as well as the mgr-mgr poaching event for a specific origin and destination firm pair. The O-D pairs sample includes 523 mgr-mgr events for which the same origin-destination firm pair also has at least one emp-mgr and/or emp-emp event. Of these pairs, 87 have at least one emp-mgr event and 469 have at least one emp-emp event; some pairs have both types, so these counts are not mutually exclusive. **Estb size** is the log of destination establishment size. **Mean outcome (ref)** is the mean of the outcome for each column for the reference group (manager to manager events). **Post** is an indicator that takes a value of 1 if the month is post-poaching.