

# Directing the Labor Market: The Impact of Shared Board Members on Employee Flows\*

Taylor A. Begley<sup>†</sup>

Peter Haslag<sup>‡</sup>

Daniel Weagley<sup>§</sup>

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## Abstract

Using résumé data on over 20 million U.S. workers, we find that the flow of employees between a pair of firms sharply drops by about 20% when the firms start to share a director on their boards. We find no trend before initiation, and the reduced flow persists throughout the overlapping period. This relationship is stronger in settings where firms are more likely to benefit from lower competition for each other's employees and is most pronounced for higher-skilled employees. The results suggest that shared directors facilitate cooperative behavior in the labor market.

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*JEL Classification:* G34, G38, J42, J62, J08, K21, K31, M50.

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<sup>†</sup>Gatton College of Business and Economics, University of Kentucky; email: [begley@uky.edu](mailto:begley@uky.edu).

<sup>‡</sup>Owen Graduate School of Management, Vanderbilt University; email: [peter.haslag@vanderbilt.edu](mailto:peter.haslag@vanderbilt.edu).

<sup>§</sup>University of Tennessee; email: [dweagley@utk.edu](mailto:dweagley@utk.edu).

# 1 Introduction

Employees benefit from more competition in the labor market and fewer frictions to moving between companies (e.g., Starr, Prescott, and Bishara, 2021; He and Wintoki, 2022). However, companies incur significant costs from higher employee turnover including the loss of firm-specific human capital and the costs to find, hire, and train new employees (Oi, 1962). Recognizing the value of retaining their employees, more than 80% of firms cite the retention of quality employees as an important risk factor or value driver in their 10-K filings (Haslag, Sensoy, and White, 2022). Given such costs of employee turnover, firms may find it mutually beneficial not to compete for each other’s employees. However, such coordination may be challenging for companies to establish. In this paper, we propose overlapping board members as a conduit for communication and coordination on labor market policies and empirically examine whether board member overlap reduces labor market flows between firms.

Using a dataset of more than 20 million résumés in the U.S. from 2004 to 2017, we show that there is a 18% relative decline in the flow of employees within a firm pair after the initiation of an overlapping director on their boards. We estimate this difference using an empirical specification with firm-pair fixed effects to account for any pair-specific drivers of worker flows (e.g., geographical proximity), origin firm-year fixed effects to account for any time-varying factors affecting worker exits from the origin firm, and destination firm-year fixed effects to account for the destination firm’s time-varying labor demand. We find a stronger negative relationship between board overlap and employee flows when firms face higher potential gains from coordination, further supporting the hypothesis that overlapping board members can act as a coordinating mechanism between firms. Specifically, we estimate greater declines in employee flows for firm pairs competing in the same labor market (i.e., firms that are geographically close, are of similar size, and have similar workforces). A conservative back-of-the-envelope calculation suggests that each instance of board overlap among firms in the same labor market decreases turnover costs by approximately 200 times

the average employee salary for each connected firm. We also find that the decline in employee flows is strongest for managers and higher-skilled workers, who are more costly to replace (e.g., Oi, 1962; Dube, Freeman, and Reich, 2010; Blatter, Muehleemann, and Schenker, 2012). Overall, the evidence is consistent with shared board members being a key mechanism for anticompetitive behavior in the labor market.

Overlapping board members are common, well-positioned to help coordinate labor policies between connected firms, and have an incentive to coordinate as the firm’s workforce is a central concern for boards.<sup>1</sup> In our sample of publicly traded firms, approximately 40% of the directors sit on multiple boards and three-quarters of firms are connected to another firm through their board. Board overlap is especially prevalent among product market peers, despite the Clayton Act of 1914 restricting director overlap among competing firms (Cabezon and Hoberg, 2022; Gopalan, Li, and Zaldokas, 2023). Although legal enforcement and most academic research on anticompetitive practices have focused on the effects of board overlap on the product market, competition in the labor market is important and can be distinct from competition in the product market. For example, a healthcare technology firm and financial technology firm may find it beneficial to not compete with one another for software engineers, even if they are not product market competitors. Overlapping board members, by holding key positions in both firms, likely have the influence and ability to coordinate policies between connected firms.

How might overlapping board members influence inter-firm labor market practices? Board members could use a number of mechanisms including formal or informal “handshake” no-poaching agreements, or they can set up unilateral policies to not hire from the other firm.<sup>2</sup> Anecdotal evidence from a major no-poaching court case in the mid-2000s involving technology firms shows that executives will go to great lengths to coordinate anti-poaching

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<sup>1</sup>“Workforce issues” recently ranked by board members as the third most important objective of their role, following only stock returns and financial metrics (which can also be impacted by labor market policies) (Roach, 2024).

<sup>2</sup>This was one of the legal recommendations following the labor collusion scandal (Lindsay and Santon, 2011).

policies.<sup>3</sup> During the time period under investigation, there was a very high degree of director overlap among the seven firms — nine overlapping directors connecting all the firms — and executives were shown to have been actively monitoring the flow of employees between firms and communicating with each other about their no-poaching policies. News articles and press releases during the case highlighted the importance of overlapping directorships in facilitating these agreements.<sup>4</sup> In our broader setting, documenting systematic direct evidence of exactly how the coordination takes place is not feasible (e.g., full transcripts or email records from all board member conversations are not available). Instead, we provide several pieces of indirect evidence that support the role of board overlap in impacting labor market practices.

Our main tests estimate whether board overlap is related to the flow of employees between connected firms using a granular panel dataset of worker flows between firms. We combine data on corporate boards from BoardEx with résumé data for over 45 million individual workers in the United States over the 2004–2017 time period provided by Emsi, Inc. (now known as Lightcast) to construct our main dataset at the firm pair-year level. The résumé data is tilted towards higher-skilled individuals and is highly correlated with industry and time-series variation in employment numbers in larger public data. We restrict our sample to publicly traded firms, and we require a minimum amount of flow within the pairs to ensure we are analyzing pairs with a relevant labor market connection. Our main sample contains 975 firms with 20.5 million unique workers for our analysis.

Our main outcome of interest is the flow of employees between each origin-destination firm pair in a given year (e.g., the flow of employees from firm  $i$  to firm  $j$  in year  $t$  as well as the flow from firm  $j$  to firm  $i$  in year  $t$ ). We regress the employee flows on an indicator for whether the firm pair shares a director in that year using a three-way fixed effects Poisson estimation

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<sup>3</sup>Complaint, United States v. Adobe Systems, Inc., No. 1:10-cv-01629 (D.D.C. Sept. 24, 2010) (No. 1)

<sup>4</sup>TechCrunch reported that the “no-poaching” agreement was in effect while Google and Apple shared a common board member. <https://techcrunch.com/2009/08/07/source-apple-and-google-agreed-not-to-poach-workers/>. The Department of Justice highlighted the overlapping directorship between eBay and Intuit in their lawsuit. <https://www.justice.gov/opa/pr/justice-department-files-lawsuit-against-ebay-inc-over-agreement-not-hire-intuit-inc.>

model developed in the international trade literature.<sup>5</sup> The three sets of fixed effects are origin-firm-year, destination-firm-year, and origin-destination firm pair fixed effects. These granular fixed effects allow us to empirically rule out several alternative hypotheses related to board overlap and employee flows by flexibly controlling for time-varying, firm-specific changes in employee exits for the origin firm and the time-varying labor demand of the destination firm. For instance, the origin-firm-year fixed effects will absorb the average effect of a large layoff at the origin firm, and the destination-firm-year fixed effects will absorb the average effect of a hiring spree by the destination firm. The firm-pair fixed effect absorbs any time-invariant drivers of employee flows between firm pairs. The main coefficient estimate represents the average difference in employee flow from firm  $i$  to firm  $j$  after board overlap begins versus before initiating a common board member while controlling for those three-way fixed effects.

Figure 1 shows the dynamic plot of our main result. In the years leading up to the establishment of having a common member on the board of two firms (board overlap), we find no pre-trend in employee flows. Starting from the first full year after initiation, there is a substantial decline in the flow of employees between the two firms. This rapid, significantly lower flow persists and diminishes even further in the first years of overlap and remains at around a 27% reduction even five years after initiation. The results are similar using alternative estimation frameworks that account for potential issues with staggered difference-in-difference estimation (Gormley and Matsa, 2011, 2016; Baker, Larcker, and Wang, 2022). Alternative explanations for this decline must then coincide with the initiation of board overlap and produce a sudden change in *pair-specific* employment flows. As we discuss more later, we directly test for changes in product market strategies and labor demand and do not find evidence that these factors can explain the documented results, lending credence to the board overlap channel.

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<sup>5</sup>The Poisson estimation with three-way fixed effects is consistent (Weidner and Zylkin, 2021) and naturally models the count of employee flows.

We conduct several additional tests examining whether the board overlap-employee flow relationship is strongest for workers who are more critical to the firm, and when the firms have a greater incentive to cooperate. These tests serve two purposes: (1) to provide supportive evidence for the role of overlapping board members in affecting labor market flows, and (2) to document when and for what types of workers that board overlap is a greater hindrance to labor mobility. We first study differential effects across worker skill levels. Higher-skill workers are costlier for firms to replace than those performing routine tasks (e.g., Oi, 1962; Dube et al., 2010; Blatter et al., 2012) and greater mobility for high-skill workers has been shown to adversely affect firm value (Shen, 2021). Given the additional costs to turnover in these more prominent positions, the benefits of coordination should be greater for higher-skill employees than for lower-skill employees. Using occupational Job Zone as a measure of worker skill level, we find that flows of high-skilled workers drop about two times further than flows of lower-skilled workers (23% compared to 12%, respectively).<sup>6</sup> Similarly, we find board overlap is associated with a much larger drop in flows for managers (29%), than for non-managers (13%). We further find that employees with advanced degrees experience a 23% decline in flows between firms after the firms begin sharing a board member, while employees without a bachelor’s degree experience a 13% reduction. In sum, the effects we find are largest among higher-skilled workers, who are typically more expensive for firms to replace.

The potential benefits to firms of coordinating hiring practices will be greater for firms that compete in the same labor market, so we next test whether there is a greater reduction in flows associated with board overlap among those pairs who are likely labor market competitors. We consider firms to be labor market competitors if they are of similar size, employ workers in similar occupations, and are located in the same geographical

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<sup>6</sup>The U.S. Department of Labor created Job Zones to classify occupations based on their required education, related experience, and on-the-job-training. Job Zones range from 1 (lowest skill) to 5 (highest skill). We classify a worker as high-skilled if they are in an occupation in Job Zone 4 or 5 as in Belo, Li, Lin, and Zhao (2017).

area. We confirm that all three characteristics strongly predict worker flows between firm pairs, establishing their relevance as proxies for labor market competition. We find that labor flows drop significantly more following board overlap when the firms are labor market competitors. Additionally, we construct direct measures of labor market competition, based on the cumulative three-year lagged flows between the two companies and the percentage of total exits. The effect is particularly pronounced when historical flows are higher and when a greater share of employees exiting the origin firm move to the destination firm. The latter result shows that the consequences of board overlap are stronger when firms have historically been more intense labor market competitors.

Another indicator that firms may demand similar workers is whether they compete in similar product markets. Many industries and product markets require specialized skills, which can constrain the pool of potential hires to employees at competitor firms. We test whether the impact of an overlapping board member on employee flows is larger when the firms are also product market competitors. Indeed, we find evidence that the drop following the initiation of board overlap is larger when the firms are closer in product market similarity. This effect is further amplified when the firms are in the same labor market. In sum, these cross-sectional tests show that drops in employee flows between firms following board overlap are strongest when the gains to firms from anti-competitive behavior are likely higher.

We next examine whether firms are more likely to coordinate through an overlapping board member when they are less able to limit employees outside options through “non-compete” contracting. In particular, we examine whether the impact of board overlap within the same labor market differs across states based on the degree to which non-compete agreements are enforced. By exploiting variation in firms’ ability to retain employees through contracting, we are able to isolate the retention motivation for firms to coordinate while differencing out other potential factors affecting employee flows associated with board overlap. We find firms in states where non-compete agreements are relatively ineffective exhibit a much stronger decline in employee flows with board overlap in the same

labor market. These results further support our main hypothesis by showing that informal labor market coordination by shared board members plays a stronger role when formal contracting mechanisms are weaker.

Our next tests assess whether the observed decrease in employee flows is primarily the result of anticompetitive actions in the labor market or simply an artifact of other decisions made by overlapping firms. Given our rich set of fixed effects, the alternative drivers of the results must vary over time at the *firm-pair* level, not just at the firm level. One such concern may be that prior to having overlapping boards, firm-pairs are already diverging from one another in the types of workers they demand. To be a threat to our interpretation, such a divergence must be disproportionately stronger for the particular firm pair relative to all of the other firms that pair with the origin and destination firms. For example, consider firms A, B, and C operating with a certain mix of software engineers and advertising executives. Suppose firm A begins tilting its labor demand more toward advertising executives around the time when firms A and B begin sharing a board member (e.g., shifting product market focus or advertising strategy). This difference could mechanically lead to lower flows of engineers between the firms. However, the divergence in labor demand between firms A and B would have to be at a relatively greater rate than between A and C to generate our results. The shift in relative similarity of labor demand or product market focus must also be sudden, substantial, and coincide precisely with the initiation of director overlap considering the absence of pre-trends in employment flows, which seems unlikely. To empirically address this issue, we estimate whether board overlap is associated with a reduction in human capital relatedness (Lee, Mauer, and Xu, 2018) or product market similarity (Hoberg and Phillips, 2016) and find no pre-trend or sudden change in these measures after the initiation of board overlap. Moreover, we continue to find a significant negative relationship between board overlap and employee flows when limiting the sample to only firm pairs who are not product market competitors prior to initiation or when including product market similarity and human capital relatedness as controls.



We also consider whether the observed relationship between board overlap and employee flows is being driven by common owners, which varies at the firm-pair level and has been shown to be related to a number of firm outcomes (see Schmalz (2018) for a recent review of the literature). We find no significant changes in common ownership surrounding the advent of board overlap suggesting contemporaneous or prior changes in common ownership are not driving the result.

In our final set of tests, we examine whether board overlap impacts firms' overall individual employee exit rates, internal promotion rates, and employee satisfaction ratings. We find that the probability that an employee leaves their firm drops by approximately 0.47 percentage points for each board overlap their firm shares with another firm with a slightly higher decrease in exit rates for higher-skilled workers (0.57). Although lower exit suggests that workers are worse off due to lower outside opportunities, it is possible that workers may actually benefit from the reduction in outside opportunity due to board overlap. For instance, if the firm is willing to invest more in the employees' human capital. If this is the case, we would expect board overlap to be associated with higher rates of promotion and higher levels of employee satisfaction. We find no evidence that this is the case, suggesting that employees are not benefiting from the reduction in outside opportunities associated with board overlap. In sum, we find that workers experience a sudden drop in labor mobility with board overlap, and no observable improvements in promotion or satisfaction.

The main contribution of our paper is to document how overlapping boards can facilitate anti-competitive behavior in the labor market. The lack of competition for workers at the connected firms may benefit the firms but likely comes at workers' expense. Theoretical work predicts that firms benefit from such arrangements with the gain from paying lower equilibrium wages outweighing any inefficiencies resulting from poorer quality matching (Krueger and Ashenfelter, 2022; Shy and Stenbacka, 2019). Empirically, collusive behavior in the form of explicit anti-poaching agreements between firms has been shown to decrease worker bargaining power. In particular, studies examining the mid-2000s anti-poaching

agreements in Silicon Valley find that this form of collusion leads to reduced wages (Gibson, 2024) and reduced non-wage benefits (Ferrés, Kankanhalli, and Muthukrishnan, 2023) for workers. Firms, on the other hand, benefited in the form of a boost to innovative capabilities and asset growth, and a reduction in refinancing risk (Ferrés et al., 2023). Our results provide novel, systematic evidence on a mechanism through which anti-competitive labor market behavior is achieved.

## 2 Institutional Details and Related Literature

### 2.1 Institutional Details

Starting with the Sherman Act of 1890, antitrust law in the United States regulates businesses to ensure market competition in all markets including labor markets (Posner, 2021). Babina, Barkai, Jeffers, Karger, and Volkova (2023) show that DOJ antitrust enforcement actions have had many positive effects including higher employment, wages, and business formation. Enforcement, however, has predominantly been focused on ensuring product market competition rather than competition in the labor market because anti-competitive labor market practices are often more difficult to identify. Unlike product markets with publicly available price data and relatively homogeneous goods and services, wage and employment contracts are typically private information and workers’ skills and experience are relatively unique (Posner, 2021). However, regulators, including the Department of Justice (DOJ) and the Federal Trade Commission (FTC), have recently signaled their willingness to enforce labor-related violations of antitrust laws.<sup>7</sup> The most noteworthy enforcement action was the DOJ’s cases against Intuit, eBay, Pixar, Adobe,

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<sup>7</sup>In 2016, the DOJ and Federal Trade Commission (FTC) jointly issued guidelines on what labor market practices would constitute a violation of antitrust laws. The document notes: “An agreement among competing employers to limit or fix the terms of employment for potential hires may violate antitrust laws if the agreement constrains individual firm decision-making with regards to wages, salaries, or benefits; term of employment, or even job opportunities.”

Apple, Google, Lucasfilm, and Intel.<sup>8</sup> The involved firms were accused of agreeing not to solicit each other’s employees (i.e., no-poaching agreements) and communications between executives and directors with explicit discussion of such agreements were made public through discovery. The following is an excerpt from the DOJ’s Competitive Impact Statement from the case:

The Complaint alleges that Defendants entered into a series of bilateral agreements, pursuant to which a Defendant agreed not to cold call another Defendant’s employees for employment opportunities. The effect of these agreements was to reduce Defendants’ competition for highly skilled technical employees (“high tech employees”), diminish potential employment opportunities for those same employees, and interfere in the proper functioning of the price-setting mechanism that would otherwise have prevailed. Defendants’ agreements are naked restraints of trade and violate Section 1 of the Sherman Act, 15 U.S.C. § 1.

The case ultimately culminated in a record settlement of over \$400 million. While previous enforcement was brought through civil cases, antitrust regulators have noted that in the future they intend to pursue criminal offenses for wage-fixing or no-poach agreements (Department of Justice, 2016).

The potential conflicts of interest present when competing firms share a board member was recognized and initially addressed by the Clayton Act (1914). Section 8 of the Clayton Act explicitly restricts directors from sitting on the boards of competitors, yet overlapping directors among product market competitors is prevalent (Nili, 2019; Gopalan et al., 2023; Cabezon and Hoberg, 2022) likely due to a lack of enforcement. Very recently, the DOJ started to enforce the restriction of overlapping board members on competing firms. For example, in October 2022, seven directors were forced to resign from boards at the request of

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<sup>8</sup><https://www.justice.gov/atr/case/us-v-adobe-systems-inc-et-al>

the DOJ. At the state level, several states have moved in the opposite direction. Between 2000 and 2016 several states enacted Corporate Opportunity Waivers (COWS), which allows firms to waive restrictions of directors sitting on the boards of firms competing in the same product market (Eldar, Grennan, and Waldock, 2020; Geng, Hau, Michaely, and Nguyen, 2021). Overall, there has not been serious or consistent regulatory attention on the anti-competitive effects of board overlap. Further, this limited attention has focused on product market competitors but not labor market competitors. We are unaware of any communication by regulators to consider whether firms are labor market competitors when determining whether an overlapping board member violates the Clayton Act.

## 2.2 Related Literature

Our paper contributes to work on the effects of board overlap on firm and market outcomes and also to the literature studying labor market competition.

Recent work has shown that board overlap influences corporate governance (Bouwman, 2011), disclosure choices (Cai, Dhaliwal, Kim, and Pan, 2014), capital structure (Gygax, Hazledine, and Martin, 2017; Li, Jiang, and Mai, 2019), risk taking (Gopalan, Gormley, and Kalda, 2021), M&A activity (Cai and Sevilir, 2012), investment (Han, Bose, Hu, Qi, and Tian, 2015; Cheng, Rai, Tian, and Xu, 2021), incidence of fraud (Lai, Lei, and Song, 2019), and bankruptcy (Haw, Song, Tan, and Wang, 2021). A main theme of this literature is that board overlap serves as a conduit for the flow of information between firms. A subset of this literature documents that this information flow potentially facilitates bad behavior (Chiu, Teoh, and Tian, 2013; Brown and Drake, 2014; Li, Cai, and Wang, 2023). Our paper is the first to examine the negative impact of board overlap on worker mobility.

More closely related to our paper is the emerging stream of research on the effects of board overlap on product market choices and broader firm outcomes. Cabezon and Hoberg (2022) document that competing firms with denser director networks exhibit greater

innovation herding with less differentiation in products. Their theory shows that it can be rational for firms to join director networks that potentially leak product information, making the leakage self-reinforcing. Geng et al. (2021) find that firms represented by more connected directors have higher return on assets, profit margins, and sales revenue. Relatedly, Gopalan et al. (2023) find that board overlap, and even second-degree overlap, results in higher margins and return on assets, but lower sales revenue. They find suppressed product market competition is responsible for the documented effects with stronger effects for firms more closely located and firms with more similar businesses. Our focus is on the relationship between board overlap and labor market outcomes, even among firms that do not directly compete in the product market. Our results show an additional mechanism through which firms could achieve better performance: labor market coordination which can lower turnover costs and potentially result in a lower wage bill.

Our results are also related to the literature on no-poaching agreements. No-poaching agreements are formal or informal arrangements made between firms that limit the ability to hire one another's employees. Krueger and Ashenfelter (2022) provide evidence of significant no-poaching agreements within the context of franchises, the one place where such agreements are legal. They also provide simple theoretical frameworks for the effects of such agreements under different competitive states. They find anti-poaching agreements create a wedge between the marginal product of labor and wages, suggesting a negative impact on wages. Shy and Stenbacka (2019) provide a theoretical model and find that firms always benefit from such arrangements, regardless of the effect on productivity that results from inferior employee-employer matching. Naidu (2010) shows anti-enticement laws in the post-bellum U.S. South softened competition and reduced labor mobility among sharecroppers. Our paper contributes to this literature on the labor market power of firms by showing a mechanism through which firms can gain some degree of power in the labor market.

Contemporaneous papers focus on the anti-poaching scandal in Silicon Valley in

the mid-2000s to learn about what led to these anti-poaching agreements and the effects of anti-poaching on the outcomes of firms and employees. Gibson (2024) shows anti-poaching led to 4.8% lower employee wages. Ferrés et al. (2023) find that firms benefited from anti-poaching agreements through reduced turnover and more innovative outputs. Herrera-Caicedo, Jeffers, and Prager (2024) use data from the investigation and related lawsuits to provide evidence that, in this case, overlap through common leadership was a key mechanism in facilitating anti-poaching agreements. These papers collectively demonstrate that firms benefited from the collusive agreements at the expense of employees, with firm connections playing a role in establishing the agreements. Our paper contributes to this literature by being the first to propose board overlap as a mechanism that can facilitate restricting labor mobility between competing firms. By examining a large panel of firms across multiple industries over a long time horizon, we provide evidence of a broad, more general relationship between board overlap and labor flows. Further, our findings highlight the role of firm incentives in determining the extent of employee flow declines associated with board overlap and reveal additional negative impacts on employees.

## **3 Data and Empirical Design**

### **3.1 Data and Summary Statistics**

Our primary dataset is a panel of employee flows between companies at the origin firm-destination firm-year level (e.g., the number of employees moving from firm A to firm B in 2012). We construct the flow data using worker résumé data from Emsi. Emsi’s database is derived from résumé postings on online job search platforms and other professional platforms. The Emsi résumé data is tilted towards higher-skilled workers and represents approximately 30% of the U.S. labor force at any given time in our sample period. The coverage is greater for large public firms whose workforce is more likely to utilize online job search and professional

platforms. The bias in our sample is towards the segment of the workforce that one might expect, and that we show in some of our tests, to be more impacted by anti-competitive labor market behavior among firms.<sup>9</sup>

The Emsi data include employee-level characteristics that we exploit in some of our tests such as Job Zone, occupation codes, and education level. The Job Zone of an occupation is defined by the U.S. Department of Labor based on its required education, related experience, and on-the-job-training. Job Zones range from 1 (lowest skill) to 5 (highest skill) (Belo et al., 2017). We classify those working in occupations in Job Zones 4 or 5 as “high-skilled,” which includes occupations such as division manager or software engineer. We also use the two-digit O\*NET occupation code “11” (Management Occupations) to classify individuals as managers.<sup>10</sup>

To construct our sample, we create a firm  $\times$  firm Cartesian product for each year in the sample. There are two observations every year for each firm pair: the flow originating from firm  $i$  to destination firm  $j$  and the flow originating from firm  $j$  to destination firm  $i$ . This method of constructing the data treats inflows and outflows differently and will allow us to account for time-varying firm-specific drivers of inflows and outflows (e.g., downsizing or employee expansion) through origin firm-year and destination firm-year fixed effects in our main specification.

We use data from BoardEx to identify firms that are connected through a shared director. We create an indicator variable for board overlap equal to one if the firm-pair share a common director for a given year. If the overlap is created in the latter half of the year, then we shift the indicator to the following year. This addresses the concern that a new overlap initiated in November, for example, is unlikely to have any influence on employee

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<sup>9</sup>Several recent studies have used and validated résumé data against broader U.S. workplace statistics (e.g., Agrawal, Hacamo, and Hu, 2021). Using the same data, Haslag et al. (2022) find that measures of hiring and turnover correlate with the time series of monthly JOLTS hiring and exit rates as well as the cross-section of industries. These suggest that the time series of employment flows mimic broader trends.

<sup>10</sup>A very small percentage of flows will be due to movements in company leadership. In untabulated results, we find that excluding directors or executives from the dependent variable does not alter our results.

flows in the prior ten months. While we believe this addresses a timing concern, our results do not depend on this adjustment given the majority of board initiation occurs in the first five months of the calendar year.

We also use firm-level data from Compustat, occupation-level data from the Bureau of Labor Statistics (BLS), employee ratings from Glassdoor, firm headquarter location data from Jennings, Lee, and Matsumoto (2017), and product market competition scores from Hoberg and Phillips (2016).<sup>11</sup>

Our final sample consists of publicly-traded firms during 2004–2017. We focus on this time range because BoardEx exhibits broad coverage starting in 2004, and our version of the Emsi data exhibits a marked decline in résumé activity post-2017. We impose several additional conditions on the final data set to ensure we are examining firm pairs that likely have meaningful labor market connections. First, we exclude very small businesses (median number of employees less than 50 in the Emsi data). This ensures that each employee flow is more meaningful within our fixed effects structure. Second, we restrict our sample to firm-pairs that experience an average annual flow greater than two employees. This condition provides a more reasonable counterfactual of flows for non-overlapped pairs.<sup>12</sup>

Table 1 presents summary statistics for our final sample of 180,166 firm-pair years, representing 975 unique firms over the period 2004–2017. The distribution of employee flows is skewed, with an average (median) firm-pair experiencing a flow of 8.5 (4) employees that are captured in our sample from origin to destination in a given year. While our coverage is extensive (approximately 30% of the workforce), these numbers are not the universe of flows. We also observe in our data that higher-skilled workers have a slightly higher average flow between employers. Our sample, which is constructed as a Cartesian product of all firms, has an unconditional rate of board overlap is 1.4%. At the firm-level, we find that

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<sup>11</sup>We thank the authors of Boone, Starkweather, and White (2024) for providing us the Glassdoor data.

<sup>12</sup>Appendix Figure A4 shows that our main result (the coefficient on *Board Overlap* in column (1) of Table 2) is relatively insensitive to changes in the threshold of the average flow requirement or dropping the requirement altogether.



76% of firms are connected to at least one other firm through board overlap; around 40% of directors sit on multiple boards; and the average length of a board overlap connection is just under five years (untabulated for brevity).

## 3.2 Empirical Design

Our main empirical design utilizes a three-way fixed-effects Poisson model. The literature studying international trade has shown the benefits of this approach when dealing with bilateral flows between two parties (Santos Silva and Tenreyro, 2006; Weidner and Zylkin, 2021; Santos Silva and Tenreyro, 2022), and our setting shares many similarities to such a framework. The positive and highly-skewed nature of our main dependent variable, the number of employees switching from one firm to another, makes our setting a prime candidate for pseudo-Poisson estimation (Cohn, Liu, and Wardlaw, 2022; Correia, Guimarães, and Zylkin, 2019b).<sup>13</sup>

In particular, we estimate the following model:

$$Flow_{o,d,y} = Poisson(\alpha + \beta \times BoardOverlap_{o,d,y} + \delta \times CeaseOverlap_{o,d,y} + \lambda_{o,y} + \gamma_{d,y} + \rho_{o,d} + \epsilon_{o,d,y}) \quad (1)$$

where  $Flow_{o,d,y}$  is the number of employees leaving origin firm  $o$  to join destination firm  $d$  in year  $y$ .  $BoardOverlap_{o,d,y}$  is an indicator variable equal to one beginning with the initial year in which firm  $o$  and firm  $d$  share a director and continuing for the rest of the sample.  $CeaseOverlap_{o,d,y}$  is an indicator variable that takes the value of one after board overlap has ceased for a firm pair. Origin-firm $\times$ year fixed effects ( $\lambda_{o,y}$ ) absorb any time-varying firm-level drivers of employee exit from the origin firm, such as layoffs after an office closure. Destination-firm $\times$ year fixed effects ( $\gamma_{d,y}$ ) absorb the average effect of shocks to a destination firm's demand for labor. Finally, origin firm $\times$ destination firm pair fixed effects ( $\rho_{o,d}$ ) account

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<sup>13</sup>When implementing the tests, we use the Stata program provided by Correia, Guimarães, and Zylkin (2019a).

for time-invariant drivers of flows from the origin firm to a destination firm over the entire sample period.

The coefficient of interest,  $\beta$ , represents the change within the pair of firms in employment flows after initiating board overlap relative to changes in employee flows from those same firms during the same year to other nonoverlapping firms.  $\hat{\beta} < 0$  indicates that board overlap corresponds to a relative decrease in the flow of employees between the connected firms. Although not the primary focus of our study, the coefficient  $\delta$  represents the relative change in flows from the overlap period to the period after overlap has ceased, with a  $\delta$  close to zero suggesting a persistent effect of board overlap on employee flows even after the formal connection is severed and  $\hat{\delta} > 0$  suggesting a reversion toward preoverlap flows.<sup>14</sup>

Our empirical specification, which uses three-way fixed effects, will absorb a number of potential alternative drivers of flows between the two companies and identify the impact of board overlap at the firm pair-year level (i.e., within a firm-year). Firm-level shocks, such as a restructuring or change of strategy that may coincide with new board members, will be absorbed by the origin-year and destination-year fixed effects. As we discuss more in Section 4.4, any alternative driver of the observed relationship would have to vary at the firm-pair-year level and be correlated with board overlap. We perform additional robustness tests and tests exploiting variation across states in non-compete agreements to rule out the main alternative hypotheses related to potential omitted variable bias. Another potential concern could be reverse causality, where a decline in employment flows prompts the connection between firms. We provide dynamic regressions to show that employee flows exhibit no significant pre-trend before the initiation of a board member connection.

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<sup>14</sup>When estimating an alternative specification with a board overlap indicator variable that is turned on only during the overlap period, we continue to find a highly statistically significant relationship, though the coefficient is slightly smaller in magnitude. We use our preferred specification throughout the paper because it allows us to compare relative flows in the overlap period to relative flows in the pre-initiation period, while the alternative specification compares to both the pre- and post-overlap periods. The post-overlap period can have carryover effects from board overlap and so does not capture our main quantity of interest: the change as firms transition from no overlap to overlap.

Moreover, in Section 4.4, we show that there are no pre-trends in the types of employees connected firms are employing or the degree of product market competition between the firm pair before board overlap is initiated.

Weidner and Zylkin (2021) show that the Poisson three-way fixed effects model is consistent when  $T$  is fixed, and it does not suffer from the incidental parameter bias that is often present in nonlinear models with fixed effects. They also show standard significance tests cannot be used as the asymptotic confidence intervals are not correctly centered and standard errors are biased. We ensure our estimators of the effects of board overlap on employee flows are unbiased and consistent by employing corrections to our estimates and standard errors using their Stata package (“ppml\_fe\_bias”). Our main tests cluster standard errors at the firm-pair level.<sup>15</sup>

## 4 Results

### 4.1 Baseline estimates

We begin by estimating the baseline relationship between board overlap and relative employee flows using Equation 1 which includes firm-pair fixed effects, origin firm-year fixed effects, and destination firm-year fixed effects. We present the results in column 1 of Table 2. The coefficient on the board overlap indicator is -0.198 and is significant at the 1% level. This implies an 18% ( $e^{-0.198} - 1$ ) reduction in the number of employees who leave the origin firm for the destination firm in a given year when the two firms are connected via a board member compared to flows from the origin firm to other firms that do not share a board member. We note that we are examining uni-directional flows, so the average effect is an 18% reduction in *both* directions (e.g., from firm  $i$  to firm  $j$  and firm  $j$  to firm  $i$ ). The

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<sup>15</sup>We do not cluster along the time dimension since clustering with a small numbers of clusters risks biasing standard errors (Thompson, 2011). However, in untabulated tests, our results remain statistically significant when double-clustering at firm-pair and year levels.

estimate is an average effect across all instances of board overlap, even those firm pairs with relatively few labor flows and little incentive to coordinate labor policies. In later tests, we show that the relationship is even larger among firm-pairs that are labor market competitors with stronger incentives to coordinate. The coefficient on the cease overlap indicator is small and statistically insignificant, suggesting some persistence in hiring practices after the board overlap has formally ceased. This result is consistent with firms maintaining the mutually beneficial labor coordination practices facilitated by the overlapping board member even after the board member connection ceases. Overall, our main results demonstrate substantially lower employee mobility between firms after the initiation of having a common director.

The granular fixed effect structure alleviates many potential concerns related to shifts in firm-level labor demand or other time-varying firm-specific shocks around the initiation of board overlap driving the results. Still, there may be concerns that board overlap begins after firms are already shifting away from hiring each other’s employees (i.e., a pre-trend). To examine this possibility and understand the dynamics of the baseline effect, we estimate a dynamic form of Equation 1 with annual indicators that span the life of the overlap period and includes an indicator that captures any effects after the overlap has ceased. On the rare occasion that firms experience multiple episodes of board overlap, we restrict our treatment to examine only the first instance of overlap between firm pairs.

Figure 1 presents the coefficient estimates over the period  $[t-5, t+5]$ , where the omitted period is  $t = 0$ , the year overlap begins. We find no evidence of a pre-trend, which lends support to the parallel trends identification assumption. The figure also makes it clear that board overlap has a strong immediate impact on employee flows that persists. We observe a significant negative coefficient in the year after board overlap initiation — a 27% decline — which persists over the next five years.

These results are robust with larger economic magnitudes when using a stacked regression estimation strategy (shown in Appendix Figure A1), which alleviates concerns

about the staggered timing of treatment (Gormley and Matsa, 2011, 2016; Baker et al., 2022). Overall, the rapid, significant decline in relative employee flows in the year after board overlap initiation is consistent with overlapping directors facilitating labor market coordination.

#### 4.1.1 Discussion of Potential Mechanisms

How might sharing a director lead to a reduction in employee flows between the two firms? Krueger and Ashenfelter (2022) state that a main factor in collusive behavior is how easily the agreement can be facilitated or monitored, and an overlapping board member is in a prime position to both facilitate and monitor such agreements. Given the nature of the activities we are studying, systematic direct evidence on the particular means and methods of coordination (e.g., transcripts of all board member communication) is not feasible. However, we provide anecdotal evidence and a discussion of some ways in which labor market coordination can take place.

The “no-poaching” labor collusion scandal in the mid-2000s provides some insights. In 2010, the DOJ accused eight firms (Adobe, Apple, eBay, Google, Intel, Intuit, Pixar, and Lucasfilm) of anti-competitive labor market practices. These firms span several industries, yet they have significant overlap in the types of employees they hire. The accused firms also had a significant amount of board member overlap during the time of the alleged misbehavior with nine overlapping directors, and each of the seven publicly traded firms had at least one overlap with another of the accused. The odds of seven firms randomly having this much overlap are tiny. For instance, using the average rate of connection between a pair of technology firms, 1.9%, there is a near-zero probability that there will be nine overlapping board members between seven firms. The email evidence in the case shows the integral role that executives, including some of the overlapping directors, played in the discussion and enforcement of the agreements. Herrera-Caicedo et al. (2024) provide a detailed study of the

case and find that antipoaching agreements were more likely to be implemented after the establishment of a common leadership connection. In sum, this prominent case demonstrates significant efforts by executives to retain talent by restricting competition for workers.

Although such explicit behavior is illegal in most circumstances, there are other methods through which a shared director can facilitate labor market coordination. For instance, unilateral hiring policies are a legal way to reduce the likelihood of intense competition for labor. As pointed out in Lindsay and Santon (2011), an employer can legally maintain its own “do not call” list to avoid bidding wars within its own industry or the broader labor market, so long as they do not explicitly coordinate these policies with other firms. The existence of a trusted intermediary like a shared board member can provide reassurance to both parties involved, creating an environment conducive to implementing and effectively monitoring the agreements.

## **4.2 Heterogeneity in the Impact of Board Overlap**

In this section, we examine how the impact of an overlapping board member varies across employee types and firm pairs. The goal of these tests is to provide supportive evidence for the role of overlapping board members in affecting labor market flows. If this is the case, then we expect a greater decrease in employee flows associated with board overlap when the incentives to coordinate (e.g., cost savings from turnover) are greater. We first examine whether there is a larger decrease in flow for those employees that are costlier for firms to lose and then examine whether the impact of board overlap is larger when firms are more likely to be competing for each other’s workers. Finally, we examine whether the impact is larger if the connected firms are product market competitors.

### 4.2.1 Employee Type and Board Overlap

Higher-skilled workers have been shown to be costlier for firms to replace than those performing routine tasks (e.g., Oi, 1962; Dube et al., 2010; Blatter et al., 2012) and the mobility of high-skill labor has been shown to be negatively related to firm value (Shen, 2021). Given the cost differential and the potential value implications, firms have more to gain by reducing turnover in higher-skilled positions. Higher-skilled workers are also more likely to be in positions of authority or management and their exit is more likely to garner the attention of upper management and the board of directors. Because the incentive to retain employees is stronger for higher-skilled workers, we expect any focus on labor market coordination associated with board overlap to tilt towards employees who are higher-skilled, in managerial positions, or more educated.

Columns 2–8 of Table 2 present results examining the relationship between board overlap and employee flows for different types of employees. We first divide employees into high-skilled and low-skilled groups based on their occupation’s Job Zone with low-skilled (high-skilled) workers in Job Zones 1–3 (4–5). Columns 2 and 3 show that high-skilled labor flows decrease by 23% ( $e^{-0.262} - 1$ ), while low-skilled labor flow is reduced by a much more modest 12%. The difference is statistically significant at the 5% level.

The regressions in columns 4 and 5 test the impact of board overlap on the flows of managers and non-managers, respectively. Managers typically hold more significant positions in the organizational hierarchy and play a crucial role in value creation for the firm. Column 4 shows that board overlap reduces the flow of managers by 29%, while column 5 shows that non-manager flows are reduced by only 13% with the difference statistically significant with a  $p$ -value of 0.02.

In columns 6–8, we present results examining flows of workers with an alternative measure of worker skill level: level of education. In column 6, we find board overlap is associated with 23% lower flows of workers with advanced degrees between the connected

firms. In column 7, we find the effect of board overlap decreases flows of workers with a bachelor's degree by 18%. Finally, in column 8, we examine the flow of individuals without a bachelor's degree or those who do not list their educational attainment and find a more modest decrease in flows associated with board overlap. These results show that more-educated workers experience a greater decrease in flows, although the difference is not statistically significant ( $p$ -value=0.101).

Across the specifications, the estimates of the relative change in employee flow following the cessation of overlap are relatively small, though we do find that the higher-valued workers (high-skill, managers, high-education) appear to have a stronger reversion towards pre-overlap flows. Overall, the results in Table 2 show that employment flows drop during board overlap to a much greater degree when the potential costs of employees leaving are greatest, supporting the notion that board members are more likely to facilitate labor market coordination when the incentives to do so are greater.

#### **4.2.2 Labor Market Competition and Board Overlap**

The incentive to cooperate in the labor market differs across firm-pairs. Firm-pairs who are not in competition for each other's workers will have little incentive to coordinate on hiring policies through their shared board member, while firms who are competing more heavily for workers are likely to find cooperation more beneficial and more economically meaningful. In this section, we examine whether labor market competitors who have these stronger incentives exhibit larger reductions in flows with board member overlap. Specifically, we examine whether there is a larger effect for firm-pairs competing in the same labor market. We also examine whether firms who historically have greater flows between them exhibit larger reductions in flows after board overlap initiation.

We consider firms as labor market competitors if they are of similar size, in the same geographic location, and employ similar types of workers. Our measure of size similarity



is the ratio of the number of employees of the smaller firm to the number of employees of the larger firm using our résumé data, which we refer to as the “workforce size ratio.” This ratio is bounded between zero and one, with a ratio closer to one indicating the firms are more similar in size. The idea is that firms of similar size are more likely to view one another as competitors with similar bargaining power, as compared to firms where one firm is significantly smaller and therefore unlikely to have much bargaining power. The second dimension is geographical proximity, which we include because labor markets tend to be localized (e.g., Manning and Petrongolo, 2017). We construct a dummy variable equal to one if the firms’ headquarters are in the same commuting zone (*Same HQ Commuting Zone*) and a similarly constructed variable for being headquartered in the same state (*Same HQ State*). We use the firm’s headquarters location as the firm’s location instead of alternative locations based on the distribution of employees locations because higher-skilled workers are more likely to work at the company headquarters. The measure of workforce similarity that we use is based on the degree of occupational overlap between the two firms (*Human Capital Relatedness*), which we calculate using our résumé data and the human-capital relatedness method from Lee et al. (2018). The measure uses the proportion of each occupation within a firm to calculate the similarity of the occupational distribution across firms and is bounded between zero and one.

We combine these attributes into two indicator variables. The first indicator (*Same Labor Mkt. 1*) takes the value of one if firms have an above-median employment size ratio ( $Employee\ Size\ Ratio \geq 0.33$ ), are headquartered in the same commuting zone, and have above-median occupational overlap ( $Human\ Capital\ Relatedness \geq 0.385$ ). Requiring that firm pairs satisfy all three dimensions is strict and may exclude pairs that do compete against each other. The second version (*Same Labor Mkt. 2*) is similar but requires the headquarters of the two firms to be located in the same state instead of commuting zone. The average firm in our sample has more than 50% of its workforce located in the state it is headquartered, so broadening the labor market to the state level captures pairs of firms who employ workers

in the same locations but are headquartered in different commuting zones.<sup>16</sup> The benefit of the commuting zone-based measure is that switching costs for employees are lower within a commuting zone than within an entire state, so firms within a commuting zone are more likely to compete for the same talent. The second measure has the benefit of the two firms having the same state-level legal regimes, unlike commuting zones, which can cross state lines.

In columns 1–4 of Table 3, we validate that the individual components of the same labor market variables are related to the observed flow of employees between firms. All continuous measures are standardized for easier interpretation. We find that all dimensions are strongly related to the baseline flows of employees between firm pairs. We find that firm pairs that are more similar in size, firm pairs that are in the same commuting zone, firm pairs that are in the same state, and firm pairs that employ more similar workers experience greater flows between them. These results validate that these dimensions are important determinants for whether firms are labor market competitors. In columns 5 and 6, we find that the two same labor market indicator variables (*Same Labor Mkt. 1* and *Same Labor Mkt. 2*) are strongly positively related to higher flows of employees between the firm-pairs with the coefficients on the same labor market indicators implying over 115% ( $e^{0.779} - 1$ ) and over 95% greater flows, respectively, for firm pairs in the same labor market compared to other firm pairs.

Having validated these measures, we test whether labor market competitors who share a common director experience even greater reductions in employee flows. Column 1 of Table 4 documents that board overlap decreases employee flows by an additional 49% when the firms are labor market competitors. The magnitude of this decline is large in percentage terms and in terms of employees, especially considering the average employee flows between firm pairs in the same labor market are substantially higher. When considering firm pairs in the same labor market, the average marginal effect of board overlap is a reduction in flows of

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<sup>16</sup>We find that for 73% of firms, their headquarters state is the state with the greatest proportion of workers.

9 employees per year. We find a similar result when we use the alternative proxy for being in the same labor market (*Same Labor Mkt 2*), although the magnitude of the coefficient is relatively smaller. Appendix Table A3 shows that the relationship between board overlap and employee flows is significantly related to each individual component of the same labor market variable, suggesting that each captures a relevant dimension of the labor market and the incentive to coordinate.

These effects suggest that when the benefit of colluding over labor is greater, there is a substantially larger drop in the flow of employees between firms during board overlap. These results also help to alleviate concerns regarding the influence of other time-varying factors that might impact both the occurrence of board overlap and the decline in employee flows. If there were any omitted variable that drives both board overlap and the decrease in employee flows, it would need to have a more substantial effect on firms operating within the same labor market. Alternative explanations such as changes in product market competition or common ownership are unlikely to generate such a prediction.

An alternative approach to defining labor market competitors is to use historical flows of employees between the firm pair. Specifically, we calculate the number of employees who left the origin firm for the destination firm in the previous three years. We standardize the measure for ease of interpretation. In column 3 of Table 4, we observe a stronger effect of board overlap when the firm pairs have historically experienced a higher flow of employees between them.

The measure of lagged flows can capture variation in firm size, as well as the competition in the labor market between firms. We compute an alternative measure, which is the share of employees who left the origin firm  $i$  for the destination firm  $j$  divided by the total number of employees that left the origin firm  $i$  over the previous three years (which we standardize). This measure has two key advantages. First, the measure accounts for any baseline differences in firm size that could be driving the level of employee flows. Second, it captures the degree

of competition between the firm pair relative to other potential competing employers in the market. Firm pairs who lose more employees to each other relative to other employers likely have a greater incentive to coordinate. We show in column 4 that the impact of board overlap on employee flows is much larger when the destination firm is hiring a larger portion of the origin firm's former employees. A one-standard deviation increase from the mean in the percentage of exiting employees moving to the other firm is associated with a 26% greater reduction in flows with board member overlap. This result supports the notion that when the incentive to coordinate is greatest, we see a much larger reduction in flows with board overlap.

In general, the results in Table 4 suggest that the decrease in employee flows after board overlap is particularly pronounced in circumstances where the incentives for firms to coordinate are strongest. These results control for the geographical and occupational proximity, as well as general labor flows to and from each firm each year. Thus, these tests more sharply isolate the distinct role that sharing a common director plays in the coordination of labor practices.

### **4.2.3 Economic Magnitude**

The results in column (1) of Table 4 suggest that board overlap among firm-pairs in the same labor market is associated with a reduction in the flow of employees by 9 employees per year. However, our sample represents only about one-third of the workforce. If our sample is representative of the true, relevant workforce, then this implies that around 27 fewer employees are switching each year of board overlap. With the average board overlap lasting around five years, this would imply about 135 fewer employees leaving firm A for firm B, with the same number of fewer employees leaving firm B to firm A. There is likely significant value in retaining this set of workers, who we have shown in Table 2 to be tilted towards more critical, higher-skilled workers. Retaining even a handful of important managers or a

team of artificial intelligence developers is likely to be value-enhancing for a company.

Industry estimates of employee turnover costs typically vary widely, often from 1-2 times employee salaries, with higher-skilled workers costing more to replace.<sup>17</sup> For our calculations, we use 1.5 times salary as the baseline cost. Given the numbers above, this suggests savings to a given firm from coordination is about 200 times the average worker’s salary per overlapping director. Considering the types of workers whose flows are reduced are tilted more towards higher-paid, high-skilled workers this may be a conservative estimate of the true savings.

#### 4.2.4 Product Market Competitors and Board Overlap

We next examine whether there is a larger decrease in flows associated with board overlap among product market competitors. Firms operating in similar product markets likely have more to gain from reducing flows of employees to each other’s firms for a couple of reasons. First, they are likely direct labor market competitors since their products will require workers with similar sets of skills and abilities. Second, product market competitors may face higher costs when employees leave for competitors as these employees take firm-specific knowledge and potential trade secrets that can benefit the destination firm at the expense of the origin firm. Given these additional incentives, we expect board overlap to have a larger impact on the flow of employees for product market competitors if firms utilize this overlap to coordinate labor. For these tests, we create an indicator variable (*Same Product Mkt*) equal to one if the firm-pair has a product similarity in the top 10% of firm-pairs of the pairwise Hoberg and Phillips (2016) product market similarity scores.

We present tests of the relationship between product market similarity, board overlap, and employee flows in Table 5. In column 1, we find that for firms that are likely product market competitors, there is a larger effect of board overlap on employee flows. The coefficient is -0.189 with a  $p$ -value < 0.01. When firms compete in a similar product market space, the

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<sup>17</sup>Deloitte, for example, provides an estimate of the cost at roughly \$110,000 per employee turnover (Erickson (2016) *Calculating the True Cost of Voluntary Turnover: The Surprising ROI of Retention*).

effects of board overlap on employee flows are larger. In columns 2 and 4, we include an interaction term for board overlap and the same labor market dummy. Using either same labor market variable, we find that being located in the same labor market is a stronger predictor of the change in employee flows with board overlap than being in the same product market.<sup>18</sup> In columns 3 and 5, we examine whether the employee flow-board overlap relationship is especially strong for firm pairs who are both in the same product market and competing in the same labor market. We see the triple interaction terms in columns 3 and 5 are large (-0.93 and -0.67) and statistically significant at the 1% level. The estimates in columns 3 and 5 imply that for firms in the same product and labor market, board overlap leads to a roughly 45%-60% relative reduction in the flow of employees between the firm pairs.

Overall, the results in this section show that board overlap has a large and significant impact on employee flows between the connected firms, and these effects are amplified in settings where it is most beneficial for firms to stem the flow of employees between them.

#### **4.2.5 How important is board member power?**

Our previous analyses document that firm incentives are a driving force in the relationship between board overlap and employee flows. In this section, we examine whether the director's role affects the degree of the decline in employee flows with board overlap. If the overlapping director is an executive at one of the companies, they are likely to have more power or direct control over their own firm policies. More broadly, we may expect a board member to have more power at the firm where they initially worked before the connection (e.g., the incumbent firm) compared to the newly connected firm. Alternatively, if the incentive to coordinate is the dominant driver, then the position of the board member

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<sup>18</sup>The coefficient on the interaction term between same product market and same labor market is a relative change as the firm moves across one of the thresholds for being coded as either a zero or one. In tests without firm-pair fixed effects, we find the relationship between labor flows and being located in the same product and labor market is positive and significant.

and their degree of power may have little differential impact. We test whether these measures of power result in a more negative relationship between overlap and employee flows. Appendix Table A1 presents the results of these tests, and finds no statistically significant differential effect of board overlap according to power. Rather, these results further highlight the primacy of firm incentives in explaining the relationship between board overlap and employee flows.

### **4.3 Non-Compete Agreement Enforceability and the Impact of Board Overlap**

Firms have multiple mechanisms they can use to retain employees. One alternative mechanism is to use non-compete agreements to increase switching costs for employees, and these agreements may substitute with informal coordination through overlapping board members. If firms are able to increase switching costs through the non-compete agreements, they should have less need to coordinate hiring policies through an overlapping board member. We examine whether this is the case by exploiting state-level variation in the level of enforcement of non-compete agreements in employment contracts (Bai, Eldemire, and Serfling, 2024; Starr et al., 2021).

By exploiting the degree of non-compete enforcement across states, our specification can account for potential omitted variables that may influence both board overlap and employee flows, provided they are unrelated to CNC policy differences across states. For instance, one concern might be that a shared board member substitutes for hiring employees from the other firm by directly facilitating knowledge transfer and human capital themselves. Given that the substitutability of a board member for other workers is unlikely to differ across states, this empirical setup allows us to difference out this and other such related concerns.

We start by examining whether the effect of board overlap is generally related to the degree of enforceability of noncompete agreements. We then examine whether it depends

on whether the firms are in the same labor market and subject to similar degrees of enforceability. Table 6 presents the results separately results for each “same labor market” indicator variable.<sup>19</sup> In columns 1 and 3, we include interactions for board overlap and the non-compete index (*CNC index*) and an interaction between board overlap and same labor market. The CNC index in our sample ranges from 0 to 9, where a higher value indicates a greater degree of enforcement. We find that board overlap does not have a differential effect depending on the degree of non-compete agreements after controlling for the effect of being located in the same labor market. The lack of a differential effect is likely because the connected firms can be located in different states and subject to different degrees of enforceability.

What if the firms are in the same area and likely subject to similar degrees of enforceability? We next examine whether firms appear to substitute between non-competes and board overlap coordination if they are in the same labor market and subject to similar legal environment. We present the results in columns 2 and 4. We find the triple-interaction coefficients are positive and statistically significant at the 5% level, which indicates that the effect of board overlap in the same labor market on employee flows is weaker when origin firms are located in states with greater enforceability of non-compete agreements. The standard deviation of the CNC index is 2.1, so a one-standard-deviation increase in the CNC index (representing greater enforceability) from the mean attenuates the effect of board overlap in the same labor market by roughly 45%. These tests provide further evidence consistent with firms using board connections for labor market coordination when the incentive to do so is greater, and these tests also allow us to difference out other potential channels through which board overlap may be related to employee flows.

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<sup>19</sup>We lose some observations from our sample because we do not have a CNC index for firms headquartered outside of the 50 states and Washington, D.C.



## 4.4 Alternative Channels

To invalidate our interpretation that board overlap leads to a reduction in employee flows, it must be the case that there is a time-varying *firm-pair* shock that is correlated with both employee flows and board overlap. One such factor may be that firms are more likely to establish board overlap when they become more dissimilar in their labor demand. For instance, they are no longer competing for the same types of employees, and, therefore, can establish board overlap with less fear of regulatory action. While the clear absence of any pre-trend in flows followed by stark changes after the initiation of board overlap (see Figure 1) suggests that such a drift is unlikely to explain the pattern of our results, we explicitly examine this possibility next.

We first test whether firms were already shifting towards employing different types of employees before initiating board overlap by re-estimating the dynamic version of Equation 1 but changing the outcome variable to our human capital relatedness measure. We standardize the measure of human capital relatedness for ease of interpretation. Panel A of Appendix Figure A2 shows no evidence of a change in human capital relatedness prior to or after the initiation of the board connection. The absence of any change in the types of employees the connected firms are employing strongly suggests that board overlap is not associated with shifts in the relative demand for labor between the two firms.

Second, we examine whether connected firms are diverging in the product market space before board overlap initiation. To do so, we run our main regression with firm-pair product market competition scores (Hoberg and Phillips, 2016) as the outcome of interest. The result is presented in Panel B of Appendix Figure A2. We find no pre-trend in relative product market similarity prior to board overlap initiation, suggesting connected firms are not diverging in their firm strategies prior to board overlap initiation. We do find a slight decline in product market similarity after four years of board overlap, though it is economically insignificant (around 0.06 standard deviations after 5 years). Furthermore, the

economically small shift in product market similarity does not appear to meaningfully affect the types of workers the firms are employing, as there is no long-run divergence in the human capital relatedness of the workers employed by the connected firms.

To control for any divergence or convergence in the product or labor market space, we can include product market similarity and human capital relatedness in our main specification. Column 1 of Appendix Table A2 shows that the coefficient on board overlap remains similar in both economic and statistical significance after the inclusion of these controls. This provides further evidence that the documented effect of board overlap on employee flows does not capture contemporaneous changes in product market similarity or the types of employees the firms are hiring around the initiation of board overlap.

We further address potential concerns related to firm-pair shifts in product market similarity by estimating our main test examining labor market flows only on the subset of firms who are *not* product market competitors (product market similarity equal to zero). An additional benefit of this test is that the firm-pairs are unlikely to be hiring employees for the product market information they possess, which helps to rule out an alternative story in which board overlap substitutes for hiring employees for product information. We continue to find a significant negative relationship between board overlap and employee flows (see Column 2 of Appendix Table A2).

One may be concerned that mergers and acquisitions activity may be impacting our interpretation. However, such changes are unlikely to bias our results in a meaningful way for a few reasons. First, less than 1% of firm-pairs in our sample experience such activity. Second, if board overlap predicts merger activity, then we would not observe flow outcomes after the two firms merge into a single firm, which limits the effect such activity could have on post-overlap flows. Third, in column 3 of Table A2, we exclude all firm-pairs that ever experienced merger activity over the entire sample and find our results are unchanged.

Other potential explanations for our results may involve changes in other firm policies

around the time of board overlap (e.g. culture, best practices, etc.). These, however, are also unlikely to explain our results because the average effect we document is bilateral. Using culture as an example, suppose there is a firm with “good” culture and one with “bad” culture. It may be the case that the “bad” firm bringing on a new, connected director from a “good” culture firm would decrease the flows from the “bad” to the “good” firm because employees have less incentive to leave following any associated culture change. However, it presumably increases the flow from the “good” culture firm to the previously “bad” culture firm as well. Thus, these differential firm policy alternatives should lead to a null result. In addition, the speed with which our effect takes place would suggest a rapid change in culture with the arrival of a board member which is unlikely as culture is typically viewed as a slow-moving phenomenon (Gorton, Grennan, and Zentefis, 2022).

Finally, recent research has shown that common ownership may result in a greater propensity of shared directors (e.g., Azar, 2022). One may be concerned that greater common ownership results in more board overlap which eventually leads to a reduction in the flow of employees to maximize portfolio value. We examine whether there is a significant change in common ownership around the initiation of board overlap in our sample using common ownership data obtained from Amel-Zadeh, Kasperk, and Schmalz (2022).<sup>20</sup> The data covers common ownership (“kappa”) across S&P500 firm-pairs. Differing from previous research, the data accounts for insider ownership and blockholders. Using the subset of firm-pair years for which common ownership is available, we find that there is no change in common ownership around the initiation of board overlap (see Appendix Figure A3). Further, in column 4 of Appendix Table A2, we find board overlap remains negative and statistically significant after controlling for common ownership and that an increase in common ownership is actually associated with greater employee flows.

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<sup>20</sup>We thank Amir Amel-Zadeh, Fiona Kasperk, and Martin Schmalz for providing the data. Please see Amel-Zadeh et al. (2022) and [www.ownershipproject.com](http://www.ownershipproject.com) for further details.

## 4.5 What are the consequences for employees?

Our results so far show a sudden and significant drop in employee flows between firms with overlapping directors. In this section, we examine three additional consequences of board overlap for employees: employee exit rates, employee promotion rates, and firm ratings by employees. One limitation of these analyses is that the data is either at the individual or firm level instead of the firm-pair level, so we cannot absorb firm-year level variation using fixed effects like we do in our main analysis.

### 4.5.1 Individual Employee Exit Rates

A key motivation for anti-poaching agreements is to retain employees and avoid increased costs associated with a competitive labor environment. From an employee perspective, the lower flow between connected firms suggests a reduction in outside opportunities and, therefore, lower mobility and competition for their talent. If this is the case, we expect lower exit rates for employees in more connected firms. We assess whether there is an overall reduction of employee mobility by examining whether employees are less likely to leave a firm as board connections increase.

We examine individual employee exit rates using individual-firm-year level data and running the following regression:

$$Exit_{i,f,y} = \alpha + \beta \times TotalBoardOverlaps_{f,y} + \iota_i + \gamma_f + \rho_{o,l,y} + \epsilon_{i,f,y} \quad (2)$$

The dependent variable is an indicator variable that takes the value of ten thousand if individual  $i$  departs firm  $f$  in year  $y$ , zero otherwise. Scaling the indicator variable by ten thousand allows the point estimate to be interpreted as a basis point effect. The main independent variable,  $TotalBoardOverlaps$ , is equal to firm  $i$ 's total number of board overlaps in year  $y$ . We include individual fixed effects, firm fixed effects, and the combination of

occupation, location (CBSA), and year fixed effects.

Columns 1–3 of Table 7 presents the results of this analysis. In column 1, we estimate a drop in the employee’s exit rate by 47 basis points for *each* associated board connection, relative to a mean of approximately 15 percentage points. Note that this decreased departure rate is not conditioned on where employees are leaving *to*, instead, this is an overall reduction in the probability of leaving the firm. In columns 2 and 3, we subset the analysis on high- and low-skilled workers, respectively. We find negative and significant effects for both groups. The estimated effect size is about one third larger for high-skilled workers, who are more likely to be affected by coordination, although the difference in coefficients is not statistically significant. For high-skilled workers, the effect size is approximately 4.5% of their average exit rate (12.6%), while for low-skilled workers it is about 2.5% of their average exit rate (16.9%). In general, these results show that board overlap is negatively associated with overall employee exit rates.

#### 4.5.2 Individual Employee Promotion Rates

Next, we examine the possibility that employees actually benefit from having fewer outside opportunities. While prior work has shown that lower mobility is generally associated with poorer outcomes for workers (e.g., Starr et al., 2021; He and Wintoki, 2022), it is possible that lower mobility could incentivize firms to invest more in workers’ human capital (Becker, 1964). While we do not observe investment in human capital directly, we can observe promotion rates within the firm, which is one plausible measure of growth in human capital.

We use the same specification as the exit analysis, with the dependent variable being a promotion indicator (scaled so the coefficient can be interpreted as a basis point effect). We define promotion as a move up the firm-specific hierarchy. We define the firm-specific hierarchy using a similar procedure to Huitfeldt, Kostøl, Nimczik, and Weber (2023). We

rank both the employee's O\*NET code and job title, independently, using an algorithm. The algorithm is based on the intuition that employees should most likely flow up in the hierarchy, with the hierarchy determined by the flow of employees between jobs. After establishing an initial hierarchy, it repeatedly randomizes the ranking of two jobs and will re-order so that the number of deviations (flowing from a higher ranked to lower ranked occupation or title) is minimized. Promotion is then defined as moving to a higher ranked occupation or title.

We present the results in columns 4–6 of Table 7. We find no evidence that a greater number of board overlaps is associated with greater internal promotion rates. In column 4, examining all workers, we find a negative and insignificant coefficient. In columns 5 and 6, we examine high-skilled and low-skilled employees, respectively. The point estimate is negative for high-skill workers and positive for low-skilled works, yet neither coefficient is significant. Thus, we no evidence that employees are better off in terms of greater internal promotions associated with board overlap

### **4.5.3 Employee Ratings**

In our last test, we examine employee satisfaction. Specifically, we examine whether board overlap is associated with improvements in employee ratings using Glassdoor data. If employees are benefiting from the lower labor mobility that comes with board overlap, we would expect higher job satisfaction. A strength of testing satisfaction is that it will be related to a variety of elements that workers find valuable including wages, culture, investment in workers' skills, etc. We use individual reviews across the following rating categories: Overall, Culture, Recommend (Yes/No), Work-life balance, and Opportunities. We regress these on total board overlaps. In Panel A of Table 8, we use the firm-year average while Panel B uses review-level data. The data spans 2008-2017 and the number of reviews increases over time. Across all specifications, we find no evidence that employee self-reported satisfaction improves with more board connections.

Overall, the results in this section support the notion that workers do not benefit from board overlap; instead, they exhibit lower mobility with no improvements in internal promotion or job satisfaction.

## 5 Conclusion

We find that the flow of employees between two firms is significantly reduced once the pair is connected through board overlap. Our results are consistent with overlapping board members serving as a mechanism for collusion in the labor market. We find no pre-trend in pairwise employment flows prior to the initiation of board overlap, and a significant, persistent decline in employee flows between firms after the establishment of board overlap. The relationship is stronger for higher-skilled employees who are more costly to replace and whose exit is more likely to attract the attention of upper-level management and the board. We also find the relationship is stronger when the connected firms and board members have a greater incentive to limit the flow of employees, as when they are in the same local labor market and in the same product market space. The relationship weakens when the firms are located in states where non-compete agreements are more strongly enforced and can, therefore, be more effectively used as an alternative avenue to restrict employee mobility. We rule out potential alternatives related to the firms moving in opposing directions in the product or labor space around board overlap. Finally, we find that the overall exit rate of employees is decreasing in the number of firms with which their employer is connected via a board connection and that employees exhibit no improvements in internal promotion rates or satisfaction with greater board overlap. Overall, we document a new consequence of board overlap that has implications for workers, regulators, and researchers studying governance and competition policy.

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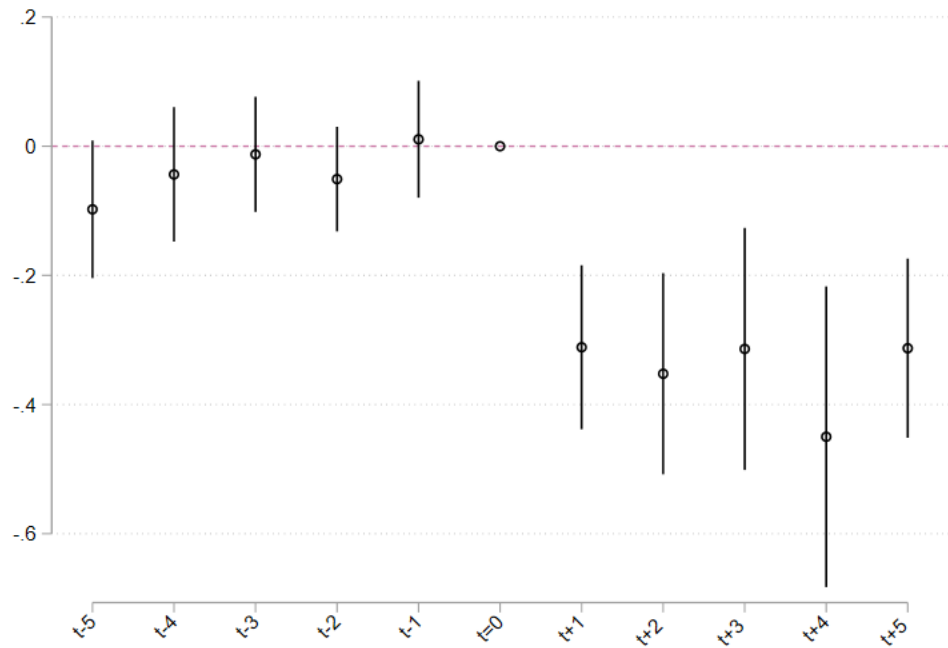
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Figure 1: **Dynamic Effects of Board Overlap**

The figure presents the estimated relative change in firm-pair employment flows around the establishment of board overlap. We use a Poisson regression and include origin firm-year, destination firm-year, and origin-destination firm pair fixed effects. Time indicators are relative to the year board overlap was established. We also include an indicator for after board overlap has ceased. For brevity, we present the coefficients for the period  $[t - 5, t + 5]$ , omitting  $t = 0$ . Standard errors are clustered at the firm-pair level and 95% confidence intervals are displayed in the figure. We correct coefficients and standard errors according to Weidner and Zylkin (2021).



## Table 1: Summary Statistics

The table presents summary statistics for our main sample, constructed from Emsi, BoardEx, and additional data from Jennings et al. (2017) and Hoberg and Phillips (2016). The sample includes all firm-pairs over the years 2004-2017 where the average flow from the origin firm to the destination firm is over 2 employees. We further restrict the sample such that the average number of employees for each firm is at least 50 and firm-years must be available in BoardEx and Emsi data sets. *Total Flow* is the number of employees who transition from the origin firm to the destination firm during year  $t$ . *Board Overlap* is a dummy variable equal to one in all years after the year board overlap is first initiated and continuing through the rest of the sample, zero otherwise. *Cease Overlap* is a dummy variable equal to one after board overlap has ceased for a firm-pair, zero otherwise. *High-skill Flow* is the number of employees who transition from the origin firm to the destination firm from occupations in BLS Job Zones 4 or 5. *Lower-skill Flow* is the number of employees who transition from the origin firm to the destination firm from occupations in BLS Job Zones 1–3. *Manager Flow* is the number of employees who transition from the origin firm to the destination firm from two-digit O\*NET occupation code “11” (Management Occupations). *Non-manager Flow* is the number of employees who transition from the origin firm to the destination firm from occupations which are not in the two-digit occupation code 11. *Grad. Flow* is the number of employees with a graduate-level degree who transition from the origin firm to the destination firm. *Bachelors Flow* is the number of employees with a bachelor’s degree and no graduate degree who transition from the origin firm to the destination firm. *No Bachelor Flow* is the number of employees with less than a bachelor’s degree or missing education data who transition from the origin firm to the destination firm. *Employee Size Ratio* is the ratio of the number of employees in the origin and destination firm where the numerator is the smaller firm, and the denominator is the larger firm. *Same HQ Commuting Zone* is an indicator variable that takes the value of one if the firm headquarters are in the same commuting zone, using headquarter locations from Jennings et al. (2017). *Same HQ State* is an indicator variable that takes the value of one if the firm headquarters are in the same state, using headquarter locations from Jennings et al. (2017). *Human Capital Relatedness* is the occupational similarity between origin and destination firms, calculated as in Lee et al. (2018). *Same Labor Mkt 1* is an indicator variable that takes the value of one if the origin and destination firms are headquartered in the same commuting zone and Employee Size Ratio and the Human Capital Relatedness measure are greater than the median. *Same Labor Mkt 2* is an indicator variable that takes the value of one if the origin and destination firms are headquartered in the same state and Employee Size Ratio and the Human Capital Relatedness measure are greater than the median. *Lag Employee Flows* is the total number of origin-destination pair flows in the previous three years. *Lag Employee Flows (% Exit)* is the ratio of Lag Employee Flows to the total number of flows of the origin firm. *Product Mkt Similarity* is a pair-wise measure of product market similarity from data provided by Hoberg and Phillips (2016). *Same Product Mkt* is an indicator variable that takes the value of one if *Product Mkt Similarity* is above the 90%tile. *CNC Index* is a state-level index ranging from 0 to 9 taken from Bai et al. (2024), where a higher value indicates a greater degree of enforcement of non-compete agreements.

	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>1%</b>	<b>25%</b>	<b>Median</b>	<b>75%</b>	<b>99%</b>
Total Flow	180,166	8.547	24.394	0.000	2.000	4.000	8.000	78.000
Board Overlap	180,166	0.014	0.117	0.000	0.000	0.000	0.000	1.000
Cease Overlap	180,166	0.005	0.068	0.000	0.000	0.000	0.000	0.000
High-skill Flow	180,166	3.861	14.327	0.000	0.000	1.000	4.000	40.000
Lower-skill Flow	180,166	3.468	9.750	0.000	0.000	1.000	4.000	35.000
Manager Flow	161,661	2.129	7.559	0.000	0.000	1.000	2.000	23.000
Non-Manager Flow	161,661	7.394	18.971	0.000	2.000	4.000	7.000	66.000
Grad. Flow	180,166	2.016	7.561	0.000	0.000	1.000	2.000	22.000
Bachelors Flow	180,166	3.175	9.681	0.000	0.000	1.000	3.000	30.000
No Bachelor Flow	180,166	3.356	9.286	0.000	0.000	1.000	3.000	32.000
Employment Ratio	180,166	0.310	0.273	0.005	0.083	0.216	0.489	0.974
Same HQ Commuting Zone	180,166	0.086	0.281	0.000	0.000	0.000	0.000	1.000
Same HQ State	180,166	0.116	0.320	0.000	0.000	0.000	0.000	1.000
Human Capital Relatedness	172,080	0.570	0.237	0.104	0.370	0.584	0.777	0.960
Same Labor Mkt 1	180,166	0.026	0.158	0.000	0.000	0.000	0.000	1.000
Same Labor Mkt 2	180,166	0.035	0.183	0.000	0.000	0.000	0.000	1.000
Lag3 Employee Flows	180,125	24.027	61.900	0.000	6.000	12.000	22.000	218.000
Lag3 Employee Flows (% of All Exit)	180,125	0.445	1.416	0.000	0.049	0.142	0.388	4.281
Product Market Similarity	180,166	0.052	0.072	0.000	0.000	0.018	0.082	0.285
Same Product Mkt	180,166	0.378	0.485	0.000	0.000	0.000	1.000	1.000
CNC Index	160,686	4.019	2.091	0.000	3.000	4.000	5.000	9.000



Table 3: **Relationship Between Firm Pair Characteristics and Employee Flows**

This table examines how firm pair characteristics are related to employee flows between the origin and destination firm. The dependent variable, *Total Flow*, is the number of employees who transition from the origin firm to the destination firm during year  $t$ . *Employee Size Ratio* is the ratio of the number of employees in the origin and destination firm where the numerator is the smaller firm, and the denominator is the larger firm. *Same HQ Commuting Zone* is an indicator variable that takes the value of one if the firm headquarters are in the same commuting zone, using headquarter locations from Jennings et al. (2017). *Same HQ State* is an indicator variable that takes the value of one if the firm headquarters are in the same state, using headquarter locations from Jennings et al. (2017). *Human Capital Relatedness* is the occupational similarity between origin and destination firms, calculated as in Lee et al. (2018). All continuous measures are standardized for ease of interpretation. *Same Labor Mkt 1* is an indicator variable that takes the value of one if the origin and destination firms are headquartered in the same commuting zone and Employee Size Ratio and the Human Capital Relatedness measure are greater than the median. *Same Labor Mkt 2* is an indicator variable that takes the value of one if the origin and destination firms are headquartered in the same state and Employee Size Ratio and the Human Capital Relatedness measure are greater than the median. We include origin firm-year and destination firm-year fixed effects. Standard errors clustered at the firm-pair level are shown below the estimates. We correct coefficients and standard errors according to Weidner and Zylkin (2021). \*\*\*, \*\*, \* indicates significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Total Flow					
Employee Size Ratio	0.256*** (0.005)					
Same HQ Commuting Zone		0.499*** (0.070)				
Same HQ State			0.314*** (0.066)			
Human Capital Relatedness				0.771*** (0.037)		
Same Labor Mkt 1					0.779*** (0.079)	
Same Labor Mkt 2						0.676*** (0.056)
Observations	180,159	180,147	180,147	171,982	180,147	180,147
<i>Pseudo-R</i> <sup>2</sup>	0.407	0.390	0.387	0.544	0.394	0.392
Origin-Firm-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Destination-Firm-Year FE	Yes	Yes	Yes	Yes	Yes	Yes



Table 4: **Board Overlap and Employment Flows in Similar Labor Markets**

This table examines whether the relationship between board overlap and employee flows is different for labor market competitors. We run Poisson regressions of origin-destination firm employee flows on a board overlap indicator and proxies for whether the firms are labor market competitors. The dependent variable is *Total Flow*, which is the number of employees who transition from the origin firm to the destination firm during year  $t$ . *Board Overlap* is a dummy variable equal to one in all years after the year board overlap is first initiated and continuing through the rest of the sample, zero otherwise. *Cease Overlap* is a dummy variable equal to one after board overlap has ceased for a firm-pair, zero otherwise. *Same Labor Mkt 1* is an indicator variable that takes the value of one if the origin and destination firms are headquartered in the same commuting zone and Employee Size Ratio and the Human Capital Relatedness measure are greater than the median. *Same Labor Mkt 2* is an indicator variable that takes the value of one if the origin and destination firms are headquartered in the same state and Employee Size Ratio and the Human Capital Relatedness measure are greater than the median. *Lag Employee Flows* is the total number of origin-destination pair flows in the previous three years. *Lag Employee Flows (% Exit)* is the ratio of Lag Employee Flows to the total number of flows of the origin firm. We standardize both measures for easier interpretation of the coefficients. We include origin firm-year, destination firm-year, and origin-destination firm pair fixed effects. Standard errors clustered at the firm-pair level are shown below the estimates. We correct coefficients and standard errors according to Weidner and Zylkin (2021). \*\*\*, \*\*, \* indicates significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Total Flow			
Board Overlap	-0.103*** (0.028)	-0.113*** (0.029)	-0.128*** (0.034)	-0.126*** (0.027)
Same Labor Mkt 1	0.036 (0.043)			
Board Overlap Ind $\times$ Same Labor Mkt 1	-0.779*** (0.169)			
Same Labor Mkt 2		0.001 (0.039)		
Board Overlap Ind $\times$ Same Labor Mkt 2		-0.558*** (0.147)		
Lag Employee Flows			0.020** (0.009)	
Board Overlap $\times$ Lag Employee Flows			-0.050*** (0.004)	
Lag Employee Flows (% Exit)				0.241*** (0.026)
Board Overlap $\times$ Lag Employee Flows (% Exit)				-0.348*** (0.058)
Cease Overlap	-0.017 (0.044)	-0.015 (0.044)	-0.009 (0.045)	-0.012 (0.042)
Observations	180,161	180,159	180,101	180,510
<i>Pseudo-R</i> <sup>2</sup>	0.758	0.758	0.758	0.760
Origin-Firm-Year FE	Yes	Yes	Yes	Yes
Destination-Firm-Year FE	Yes	Yes	Yes	Yes
Origin-Destination FE	Yes	Yes	Yes	Yes

Table 5: **Board Overlap, Employment Flows, and Product Market Similarity**

This table examines whether the relationship between board overlap and employee flows is different for product market competitors and labor market competitors. We run Poisson regressions of origin-destination firm employee flows on a board overlap indicator and proxies for whether the firms are labor market competitors or product market competitors. The dependent variable is *Total Flow*, which is the number of employees who transition from the origin firm to the destination firm during year  $t$ . *Board Overlap* is a dummy variable equal to one in all years after the year board overlap is first initiated and continuing through the rest of the sample, zero otherwise. *Cease Overlap* is a dummy variable equal to one after board overlap has ceased for a firm-pair, zero otherwise. *Same Product Mkt* is an indicator variable that takes the value of one if *Product Mkt Similarity* is above the 90%tile, where *Product Mkt Similarity* is a pair-wise measure of product market similarity from data provided by Hoberg and Phillips (2016). *Same Labor Mkt 1* is an indicator variable that takes the value of one if the origin and destination firms are headquartered in the same commuting zone and Employee Size Ratio and the Human Capital Relatedness measure are greater than the median. We include origin firm-year, destination firm-year, and origin-destination firm pair fixed effects. Standard errors clustered at the firm-pair level are shown below the estimates. We correct coefficients and standard errors according to Weidner and Zylkin (2021). \*\*\*, \*\*, \* indicates significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
	Total Flow				
Board Overlap	-0.120*** (0.034)	-0.075** (0.033)	-0.090*** (0.032)	-0.079** (0.033)	-0.102*** (0.033)
Same Product Mkt	0.006 (0.009)	0.011 (0.009)	0.010 (0.009)	0.012 (0.009)	0.011 (0.009)
Board Overlap $\times$ Same Product Mkt	-0.189*** (0.068)	-0.075 (0.053)	-0.017 (0.049)	-0.093* (0.053)	-0.018 (0.051)
Same Product Mkt $\times$ Same Labor Mkt		-0.121*** (0.047)	-0.111** (0.047)	-0.120*** (0.041)	-0.107** (0.042)
Same Labor Mkt		0.122** (0.059)	0.119** (0.059)	0.084* (0.050)	0.077 (0.050)
Board Overlap $\times$ Same Labor Mkt		-0.716*** (0.166)	0.017 (0.205)	-0.498*** (0.140)	-0.016 (0.126)
Board Overlap $\times$ Same Product Mkt $\times$ Same Labor Mkt			-0.925*** (0.257)		-0.666*** (0.185)
Cease Overlap	-0.008 (0.045)	-0.021 (0.044)	-0.026 (0.043)	-0.019 (0.044)	-0.018 (0.044)
Labor Market Definition	-	1	1	2	2
Observations	179,909	179,909	179,908	179,908	179,907
<i>Pseudo-R</i> <sup>2</sup>	0.758	0.758	0.758	0.758	0.758
Origin-Firm-Year FE	Yes	Yes	Yes	Yes	Yes
Destination-Firm-Year FE	Yes	Yes	Yes	Yes	Yes
Origin-Destination FE	Yes	Yes	Yes	Yes	Yes

Table 6: **Board Overlap and Employment Flows with Different Levels of Non-Compete Enforcement**

This table examines whether the relationship between board overlap and employee flows is different varies for differing levels of non-compete enforcement. We run Poisson regressions of origin-destination firm employee flows on a board overlap indicator, proxies for whether the firms are labor market competitors, and the degree of non-compete enforcement. The dependent variable is *Total Flow*, which is the number of employees who transition from the origin firm to the destination firm during year  $t$ . *Board Overlap* is a dummy variable equal to one in all years after the year board overlap is first initiated and continuing through the rest of the sample, zero otherwise. *Cease Overlap* is a dummy variable equal to one after board overlap has ceased for a firm-pair, zero otherwise. *Same Labor Mkt 1* is an indicator variable that takes the value of one if the origin and destination firms are headquartered in the same commuting zone and Employee Size Ratio and the Human Capital Relatedness measure are greater than the median. *Same Labor Mkt 2* is an indicator variable that takes the value of one if the origin and destination firms are headquartered in the same state and Employee Size Ratio and the Human Capital Relatedness measure are greater than the median. *CNC Index* is a state-level index ranging from 0 to 9 taken from Bai et al. (2024), where a higher value indicates a greater degree of enforcement of non-compete agreements. We include origin firm-year, destination firm-year, and origin-destination firm pair fixed effects. Standard errors clustered at the firm-pair level are shown below the estimates. We correct coefficients and standard errors according to Weidner and Zylkin (2021). \*\*\*, \*\*, \* indicates significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Total Flow			
Board Overlap	-0.189** (0.074)	-0.098 (0.069)	-0.213*** (0.075)	-0.132* (0.071)
Same Labor Mkt	-0.023 (0.068)	0.005 (0.071)	-0.038 (0.049)	-0.022 (0.050)
Board Overlap $\times$ Same Labor Mkt	-0.465*** (0.151)	-0.805*** (0.208)	-0.315** (0.128)	-0.568*** (0.180)
Board Overlap $\times$ CNC Index	0.018 (0.015)	-0.002 (0.014)	0.022 (0.015)	0.003 (0.014)
Same Labor Mkt $\times$ CNC Index	0.001 (0.020)	-0.007 (0.020)	0.000 (0.017)	-0.005 (0.017)
Board Overlap $\times$ Same Labor Mkt $\times$ CNC Index		0.113** (0.046)		0.083** (0.038)
Cease Overlap	0.016 (0.042)	0.017 (0.042)	0.018 (0.042)	0.021 (0.042)
Labor Market Definition	1	1	2	2
Observations	159,856	159,856	159,856	158,856
<i>Pseudo-R</i> <sup>2</sup>	0.754	0.754	0.754	0.754
Origin-Firm-Year FE	Yes	Yes	Yes	Yes
Destination-Firm-Year FE	Yes	Yes	Yes	Yes
Origin-Destination FE	Yes	Yes	Yes	Yes

Table 7: **Board Overlap and Individual Exit Propensities**

This table examines how employee exit and promotion rates are related to the number of board overlaps. In columns (1)-(3), the dependent variable, *Employee Exit Likelihood*, is an indicator variable which takes the value of one if an employee leaves a firm in a given year, zero otherwise. In columns (4)-(6), the dependent variable, *Promotion Likelihood*, is an indicator variable which takes the value of one if an employee is promoted in a given year, zero otherwise. We multiply each outcome variable by 10,000, which allows the point estimate to be interpreted as a basis point effect. The independent variable, *Total Board Overlaps*, is the number of firms that share a common director with the employee's firm. The unit of observation is at the individual-firm-year level. We include all individual-firm-years from public firms in our sample, in order to account for individual-level exit rates and local employee and firm behavior. In columns 2, 3, 5 and 6 we subset the sample by skill level, as in Belo et al. (2017). High-(Low-)skill occupations are those in BLS Job Zones 4 or 5 (1-3). We include individual, firm, and occupation-location-year fixed effects in all regressions as denoted below the table. Standard errors double-clustered at the individual and firm-year levels are shown below the estimates. \*\*\*, \*\*, \* indicates significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Employee Exit Likelihood (bps)			Promotion Likelihood (bps)		
Total Board Overlaps	-47.052** (19.105)	-56.714*** (18.741)	-42.438* (23.791)	-1.998 (2.007)	-4.271 (3.261)	4.131 (3.274)
Subset?	No	High-skill	Low-skill	No	High-skill	Low-skill
Observations	80,207,387	37,697,836	41,740,788	64,438,641	31,240,331	32,268,733
$R^2$	0.304	0.279	0.342	0.248	0.244	0.326
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes
Occ. $\times$ CBSA $\times$ Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 8: **Glassdoor Employee Ratings**

This table presents Poisson estimates from the regression of Glassdoor employee review ratings on the number of firm-year board overlaps. In Panel A, we use firm-level averages for the year and in Panel B, we use the individual ratings. To reduce noise in the estimates, we require at least five ratings in a firm-year. The employee ratings are the overall assessment (column 1), culture (2), whether an employee would recommend the firm (3), work-life balance (4), and opportunities. Each ratings is on a scale of 1-5, except for Recommend, which takes a value of zero or one. The independent variable, *Total Board Overlaps*, is the number of firms that share a common director with the employee’s firm. We include firm and year fixed effects in all regressions. Standard errors are clustered at the firm level and are shown below the estimates. \*\*\*, \*\*, \* indicates significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Firm-level Glassdoor Ratings

	(1)	(2)	(3)	(4)	(5)
	Overall Avg.	Culture Avg.	Recommend Avg.	Work/Life Avg.	Opps. Avg.
Total Board Overlaps	0.003 (0.004)	-0.001 (0.004)	0.005 (0.010)	-0.004 (0.003)	0.005 (0.004)
Observations	3,593	24,64	3,409	3,593	3,593
<i>Pseudo-R</i> <sup>2</sup>	0.014	0.020	0.023	0.015	0.010
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Panel B: Review-level Glassdoor Ratings

	(1)	(2)	(3)	(4)	(5)
	Overall	Culture	Recommend	Work/Life	Opps.
Total Board Overlaps	0.002 (0.002)	0.000 (0.003)	0.004 (0.005)	-0.003* (0.002)	0.003 (0.003)
Observations	641,863	506,795	515,439	580,061	580,089
<i>Pseudo-R</i> <sup>2</sup>	0.010	0.013	0.013	0.012	0.008
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

# Appendix A: Additional Figures and Tables

Figure A1: **Dynamic Effects of Board Overlap - Stacked Regression**

The figure presents the estimated relative change in firm-pair employment flows around the establishment of board overlap. We use a stacked Poisson regression approach as suggested by Gormley and Matsa (2011, 2016); Baker et al. (2022). We include cohort origin firm year, cohort destination firm year, and cohort origin-destination firm pair fixed effects. Cohorts are determined by the year board overlap is established and for each year cohort we exclude any previously treated firm-pair year. Time indicators are relative to the year board overlap was established. We also include an indicator for after board overlap has ceased. For brevity, we present the coefficients for the period  $[t - 5, t + 5]$ , omitting  $t = 0$ . Standard errors are clustered at the cohort firm-pair level and 95% confidence intervals are displayed in the figure. We correct coefficients and standard errors according to Weidner and Zylkin (2021).

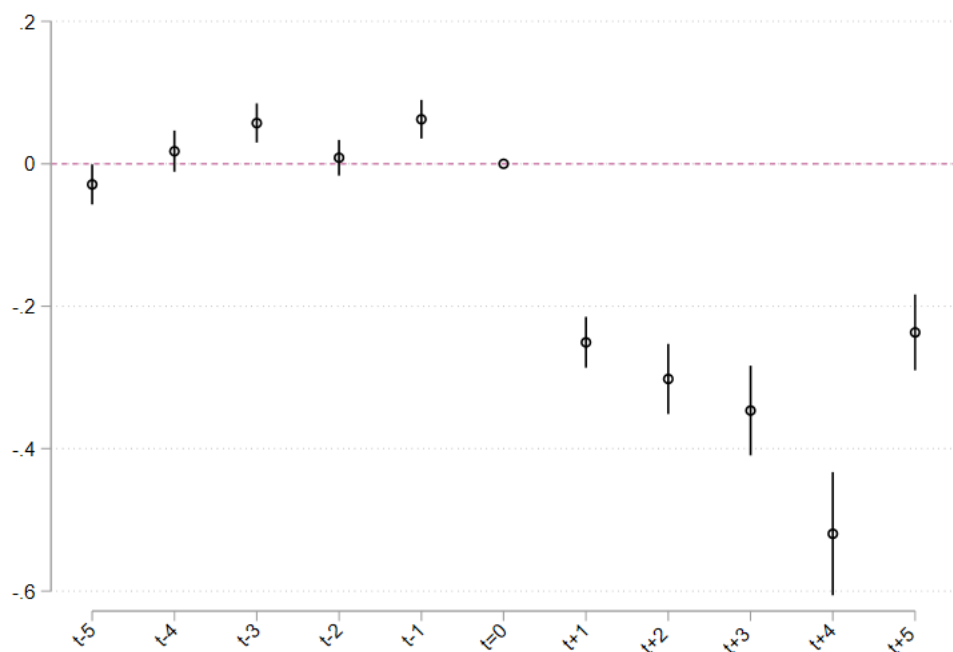
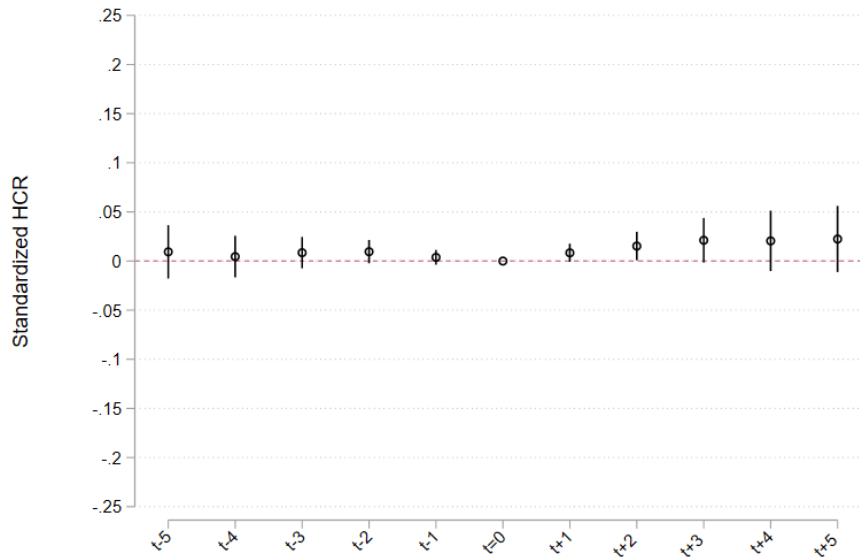


Figure A2: **Dynamic Effects of Board Overlap - Similarity Measures**

The figure presents the estimated relative change in *Human Capital Relatedness* and *Product Mkt Similarity* around the establishment of board overlap. We standardize each measure for ease of interpretation. We use a panel regression and include origin firm year, destination firm year, and origin-destination firm pair fixed effects. Time indicators are relative to the year board overlap was established. We also include an indicator for after board overlap has ceased. For brevity, we present the coefficients for the period  $[t - 5, t + 5]$ , omitting  $t = 0$ . Standard errors are clustered at the firm-pair level and 95% confidence intervals are displayed in the figure. We correct coefficients and standard errors according to Weidner and Zylkin (2021).

**Panel A: Board Overlap and Human Capital Relatedness**



**Panel B: Board Overlap and Product Market Similarity**

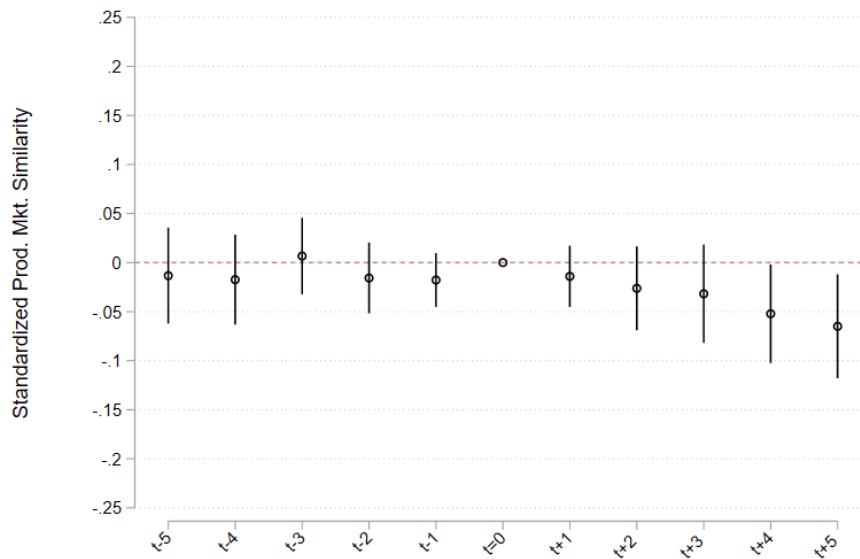


Figure A3: **Dynamic Effects of Board Overlap - Common Ownership**

The figure presents the estimated relative change in common ownership around the establishment of board overlap. *Common Ownership* is the profit weight assigned by origin to destination firm, calculated as in Amel-Zadeh et al. (2022). We use a Poisson regression and include origin firm year, destination firm year, and origin-destination firm pair fixed effects. Time indicators are relative to the year board overlap was established. We also include an indicator for after board overlap has ceased. For brevity, we present the coefficients for the period  $[t - 5, t + 5]$ , omitting  $t = 0$ . Standard errors are clustered at the firm-pair level and 95% confidence intervals are displayed in the figure. We correct coefficients and standard errors according to Weidner and Zylkin (2021).

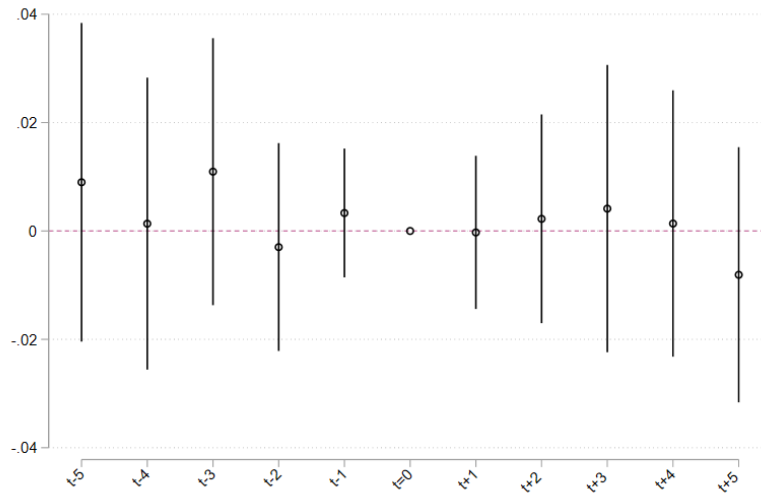




Figure A4: **Board Overlap and Average Flow Requirement**

The figure presents the estimated coefficients of our main regression (Table 2 Column (1)), where we vary the minimum average flow requirement between origin and destination firms. We run each regression separately, changing only the minimum average flow required for inclusion in the sample. The legend reflects the minimum required average flow condition used. *Board Overlap* is a dummy variable equal to one in all years after the year board overlap is first initiated and continuing through the rest of the sample, zero otherwise. The dependent variable is *Total Flow*, which is the number of employees who transition from the origin firm to the destination firm during year  $t$ . *Cease Overlap* is a dummy variable equal to one after board overlap has ceased for a firm-pair, zero otherwise. The be included in the sample, firm-pairs must have experienced at least one employee flow. We use a Poisson regression and include origin firm year, destination firm year, and origin-destination firm pair fixed effects. Standard errors are clustered at the firm-pair level and 95% confidence intervals are displayed in the figure. We correct coefficients and standard errors according to Weidner and Zylkin (2021).

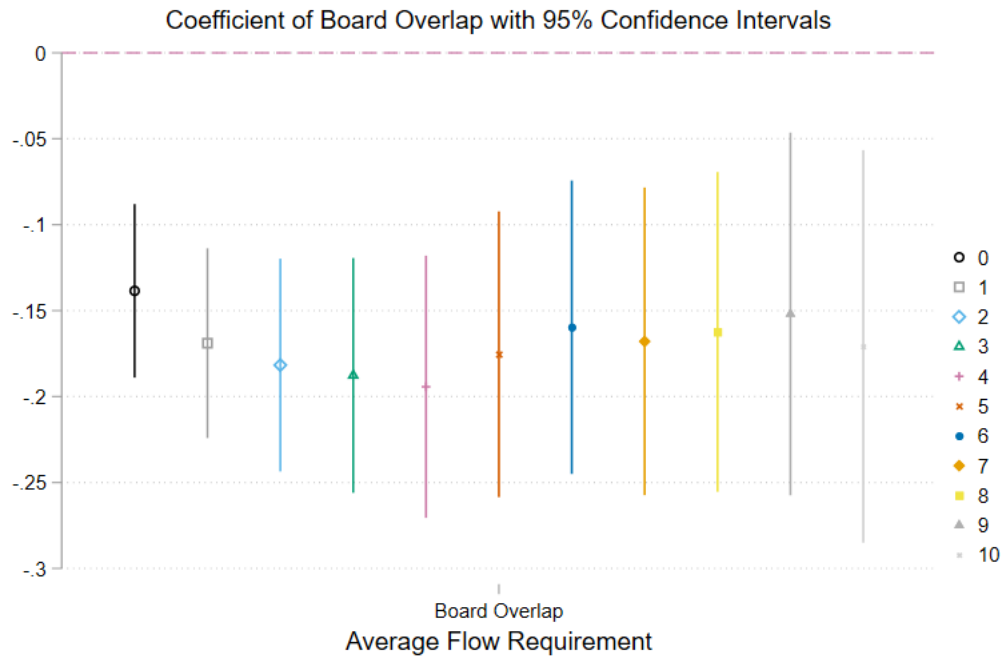


Table A1: Board Overlap and Board Power

This table examines whether the relationship between board overlap and employee flows is different if the director holds a position of power. We run Poisson regressions of employee flow on a board overlap indicator and proxies for whether the director has power within the board. The dependent variable is *Total Flow*, which is the number of employees who transition from the origin firm to the destination firm during year  $t$ . *Board Overlap* is a dummy variable equal to one in all years after the year board overlap is first initiated and continuing through the rest of the sample, zero otherwise. *Cease Overlap* is a dummy variable equal to one after board overlap has ceased for a firm-pair, zero otherwise. *Executive* is an indicator variable that takes the value of one if the overlapping director is an executive at either of the connected firms, zero otherwise. *Incumbent* is an indicator variable that takes the value of one if the director began their role at the origin-firm prior to the destination firm, zero otherwise. *Same Labor Mkt 1* is an indicator variable that takes the value of one if the origin and destination firms are headquartered in the same commuting zone and Employee Size Ratio and the Human Capital Relatedness measure are greater than the median. We standardize both measures for easier interpretation of the coefficients. We include origin firm-year, destination firm-year, and origin-destination firm pair fixed effects. Standard errors clustered at the firm-pair level are shown below the estimates. We correct coefficients and standard errors according to Weidner and Zylkin (2021). \*\*\*, \*\*, \* indicates significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Total Flow					
Board Overlap	-0.186***	-0.195***	-0.101***	-0.110***	-0.115***	-0.107***
	(0.050)	(0.049)	(0.036)	(0.039)	(0.035)	(0.036)
Board Overlap $\times$ Executive	-0.037		-0.005		0.040	
	(0.074)		(0.060)		(0.055)	
Board Overlap $\times$ Incumbent		-0.006		0.015		0.009
		(0.073)		(0.061)		(0.054)
Same Labor Market			0.036	0.036	0.037	0.036
			(0.043)	(0.043)	(0.043)	(0.043)
Board Overlap $\times$ Same Labor Market			-0.778***	-0.779***	-0.644**	-0.811***
			(0.171)	(0.170)	(0.268)	(0.299)
Board Overlap $\times$ Same Labor Market $\times$ Executive					-0.365	
					(0.304)	
Board Overlap $\times$ Same Labor Market $\times$ Incumbent						0.059
						(0.354)
Cease Overlap	0.006	0.005	-0.017	-0.017	-0.017	-0.017
	(0.045)	(0.045)	(0.044)	(0.044)	(0.044)	(0.044)
Observations	180,005	180,005	180,000	180,000	180,000	180,000
<i>Pseudo-R</i> <sup>2</sup>	0.758	0.758	0.758	0.758	0.758	0.758
Origin-Firm-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Destination-Firm-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Origin-Destination FE	Yes	Yes	Yes	Yes	Yes	Yes

Table A2: **Board Overlap and Employment Flow Effects - Robustness**

This table presents Poisson estimates from the regression of origin-destination firm employee flows on a board overlap indicator. *Board Overlap* is a dummy variable equal to one in all years after the year board overlap is first initiated and continuing through the rest of the sample, zero otherwise. The dependent variable is *Total Flow*, which is the number of employees who transition from the origin firm to the destination firm during year  $t$ . *Cease Overlap* is a dummy variable equal to one after board overlap has ceased for a firm-pair, zero otherwise. Column 1 incorporates control variables for *Product Mkt Similarity* and *Human Capital Relatedness*. *Product Mkt Similarity* is a pair-wise measure of product market similarity from data provided by Hoberg and Phillips (2016). *Human Capital Relatedness* is the occupational similarity between origin and destination firms, calculated as in Lee et al. (2018). In column 2, the analysis is limited to firm-pairs with no product market similarity (score=0). Column 3 restricts the sample to firm-pairs that have not engaged in mutual M&A activities throughout the entire sample. Column 4 includes common ownership as an additional control variable. For firm-pairs with available data, “kappa” is used to quantify common ownership, based on data from Amel-Zadeh et al. (2022). We include origin firm year, destination firm year, and origin-destination firm pair fixed effects. Standard errors are clustered at the firm-pair level and are shown below the estimates. We correct coefficients and standard errors according to Weidner and Zylkin (2021). \*\*\*, \*\*, \* indicates significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Total Flow			
Board Overlap	-0.200*** (0.036)	-0.101** (0.044)	-0.187*** (0.039)	-0.109*** (0.035)
Product Mkt Similarity	0.046 (0.098)			
Human Capital Relatedness	1.330*** (0.122)			
Common Ownership				0.101** (0.049)
Cease Overlap	0.006 (0.042)	0.013 (0.074)	0.028 (0.043)	0.028 (0.059)
Subset?	No	No Product Market Competition	No M&A Firm-Pairs	No
Observations	171,907	66,494	178,342	57,706
<i>Pseudo-R</i> <sup>2</sup>	0.758	0.758	0.755	0.816
Origin-Firm-Year FE	Yes	Yes	Yes	Yes
Destination-Firm-Year FE	Yes	Yes	Yes	Yes
Origin-Destination FE	Yes	Yes	Yes	Yes

Table A3: **Board Overlap and Same Labor Market Components**

This table examines whether the relationship between board overlap and employee flows varies by the individual components used to construct our same labor market indicator variables. We run Poisson regressions of employee flow on a board overlap indicator and underlying proxies for whether firms are competing in the same labor market. The dependent variable is *Total Flow*, which is the number of employees who transition from the origin firm to the destination firm during year  $t$ . *Board Overlap* is a dummy variable equal to one in all years after the year board overlap is first initiated and continuing through the rest of the sample, zero otherwise. *Cease Overlap* is a dummy variable equal to one after board overlap has ceased for a firm-pair, zero otherwise. For comparability, we use indicator variables that take the value of one if that particular component of *Same Labor Market* is satisfied, zero otherwise. For example, *Size* is an indicator variable that takes the value of one if the relative size is above the median, denoting the firms are of similar size. *Employee Size Ratio* is the ratio of the number of employees in the origin and destination firm where the numerator is the smaller firm, and the denominator is the larger firm. *Same HQ Commuting Zone* is an indicator variable that takes the value of one if the firm headquarters are in the same commuting zone, using headquarter locations from Jennings et al. (2017). *Same HQ State* is an indicator variable that takes the value of one if the firm headquarters are in the same state, using headquarter locations from Jennings et al. (2017). *Human Capital Relatedness* is the occupational similarity between origin and destination firms, calculated as in Lee et al. (2018). We include origin firm-year, destination firm-year, and origin-destination firm pair fixed effects. Standard errors clustered at the firm-pair level are shown below the estimates. We correct coefficients and standard errors according to Weidner and Zylkin (2021). \*\*\*, \*\*, \* indicates significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Total Flow			
Board Overlap	-0.087** (0.036)	-0.042 (0.048)	-0.123*** (0.029)	-0.130*** (0.030)
Size	0.035** (0.014)			
Board Overlap $\times$ Size	-0.198*** (0.063)			
Human Capital Relatedness		0.044*** (0.013)		
Board Overlap $\times$ Human Capital Relatedness		-0.213*** (0.058)		
Same HQ Commuting Zone			0.102*** (0.039)	
Board Overlap $\times$ Same HQ Commuting Zone			-0.380*** (0.126)	
Same HQ State				0.105*** (0.036)
Board Overlap $\times$ Same HQ State				-0.281*** (0.106)
Cease Overlap	0.001 (0.045)	-0.001 (0.045)	-0.003 (0.045)	-0.002 (0.045)
Observations	180,161	180,166	180,154	180,164
<i>Pseudo-R</i> <sup>2</sup>	0.758	0.758	0.758	0.758
Origin-Firm-Year FE	Yes	Yes	Yes	Yes
Destination-Firm-Year FE	Yes	Yes	Yes	Yes
Origin-Destination FE	Yes	Yes	Yes	Yes