

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

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March 19, 2024

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 prior to 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.

Keywords: Board Overlap, Employment Flows, Monopsony, Collusion.

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

*We are grateful to Tania Babina, Bill Christie, Todd Gormley, Swarnodeep Homroy, Prasad Krishnamurthy, Wenting Ma, Danilo Mascia, Alejandro Micco, Paige Ouimet, Alminas Žaldokas, Linghang Zeng, and seminar and conference participants at the 2023 Conference on Empirical Legal Studies, 2023 Dolomites Summer Finance Conference, 2023 Erasmus Corporate Governance Conference, 2023 Fall Labor and Finance Group Conference, 2023 Santiago Finance Workshop, 2024 Bretton Woods Accounting and Finance Ski Conference, 2024 Midwest Finance Association Annual Meeting, Georgia Institute of Technology, Michigan State University, University of Kansas, University of North Texas, University of Tennessee, and Vanderbilt University for helpful comments. We gratefully acknowledge financial support from the Hans Stoll Financial Market Research Center.

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1 Introduction

Employees benefit from more labor market competition and fewer frictions to moving between companies (e.g., Starr, Prescott, and Bishara, 2021; He and Wintoki, 2022). Firms, however, 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). Firms recognize the value of retaining their employees, as more than 80% of firms' 10-K filings cite retention of quality employees as an important risk factor or value driver (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 to establish and maintain. 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 over 20 million résumés in the U.S. from 2004 to 2017, we show that there is a 18.3% relative decline in the flow of employees within a firm pair following 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, which supports 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 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 high-skilled workers who are more costly to replace (e.g., Oi, 1962; Dube, Freeman, and Reich, 2010; Blatter, Muehlemann, and Schenker, 2012). Overall, the evidence is consistent with shared board members being a key mechanism for anticompetitive behavior in the labor market.

Although the Clayton Act of 1914 restricted director overlap among competing firms, there is a significant amount of board overlap even among product market peers (Cabezon and Hoberg, 2022; Gopalan, Li, and Zaldokas, 2023). In our sample of publicly traded firms, we find that around 40% of directors sit on multiple boards. Currently, legal enforcement and most academic research related to anticompetitive behavior and overlapping directors mainly focus on the product market. Our work, however, provides novel evidence on anticompetitive behavior in the labor market. For example, a healthcare technology firm and financial technology firm may find it beneficial to reduce inter-firm competition for software engineering workers even if they are not product market competitors. Overlapping board members, by holding positions of influence in both firms, are well-positioned to help 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.¹ Anecdotal evidence from a major no-poaching court case in the mid-2000s involving technology firms shows the lengths that executives will go to coordinate on anti-poaching policies.² 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

¹This was one of the legal recommendations following the labor collusion scandal (Lindsay and Santon, 2011).

²Complaint, United States v. Adobe Systems, Inc., No. 1:10-cv-01629 (D.D.C. Sept. 24, 2010) (No. 1)

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.³ 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 between the pairs to ensure we are analyzing pairs with a relevant labor market connection. Our main sample contains 979 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 model developed in the international trade literature.⁴ 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

³TechCrunch 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.>

⁴The Poisson estimation with three-way fixed effects is consistent (Weidner and Zylkin, 2021) and naturally models the count of employee flows.

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.

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 whom board overlap can have a more deleterious effect on

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 that overlapping boards may provide 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).⁵ Similarly, we find board overlap is associated with a much larger drop in flows for managers (26%), than for non-managers (14%). 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 14% reduction. In sum, the effects we find are largest among higher-skilled workers who are typically costlier 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 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. We also construct direct measures of labor market competition based on the cumulative three-year lagged flows between the two companies. We find larger drops associated with

⁵The 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).

board overlap when there are historically greater flows between the two companies or when a greater share of employees who exit are going to the destination firm.

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. 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 geographical proximity to one another, of similar size, and have similar workforce characteristics. 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 the 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. This is not necessarily surprising considering institutional investors are rarely represented on firm boards (Geng, Hau, Michaely, and Nguyen, 2022).

In our final set of tests, we examine whether board overlap impacts firms' overall individual employee exit rates. We find that the probability that an employee leaves their firm drops by approximately 0.21 percentage points for each board overlap their firm shares with another firm. These results suggest that more connected firms have lower overall employee exit, and these results also highlight potential broader harm to employees in the form of reduced labor mobility.

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, 2022) and reduced non-wage benefits (Ferrés, Kankanhalli, and Muthukrishnan, 2022) 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., 2022). Our results provide novel, systematic evidence on a mechanism through which anti-competitive labor market behavior is achieved and maintained.

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.⁶ The most noteworthy enforcement action was the DOJ's cases against Intuit, eBay, Pixar, Adobe, Apple, Google, Lucasfilm, and Intel.⁷ 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

⁶In 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."

⁷<https://www.justice.gov/atr/case/us-v-adobe-systems-inc-et-al>

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 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 explicitly allow directors to sit 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. Overall, there is a broad consensus that collusive behavior such as no-poaching agreements benefit the firm at the expense of employees. Our paper contributes to this literature by documenting a mechanism – board overlap – that can stifle labor mobility across firms.

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., 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.⁸

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.

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

⁸Several 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.

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 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), firm headquarter location data from Jennings, Lee, and Matsumoto (2017), and product market competition scores from Hoberg and Phillips (2016).

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 ensures we have a more reasonable counterfactual of flows for non-overlapped pairs.

Table 1 presents summary statistics for our final sample of 179,594 firm-pair years, representing 979 unique firms over the period 2004-2017. In our sample, the distribution of employee flows is skewed, with an average (median) firm-pair experiencing a flow of 8.6 (4) employees 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. In our data, higher-skilled workers have a slightly higher average flow between employers. Given that our sample is constructed as a Cartesian product of all firms, the unconditional rate of board overlap is 1.4%. At the firm-level, we find that 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).⁹

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 following 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

⁹When implementing the tests, we use the Stata program provided by Correia, Guimarães, and Zylkin (2019a).

($\rho_{o,d}$) account for time-invariant drivers of flows from the origin firm to a destination firm over the entire sample period.

The coefficient of interest, β , represents the within-firm-pair change in employment flows after initiating board overlap relative to changes in employee flows from those same firms during the same year to other non-overlapping firms. A $\hat{\beta} < 0$ indicates that board overlap corresponds to a relative decrease in the flow of employees between the connected firms. While not the primary focus of our study, the coefficient δ represents the relative change in flows from the overlap period to the period after overlap has ceased, with a δ 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 pre-overlap flows.¹⁰

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. Moreover, in Section 4.4, we show that there are no pre-trends in the types of employees

¹⁰When 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 carry-over effects from board overlap and so does not capture our main quantity of interest: the change as firms transition from no overlap to overlap.

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. Our main tests cluster standard errors at the firm-pair level.¹¹ 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”).

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 -0.202 and is significant at the 1% level. This implies a 18.3% ($e^{-0.202} - 1$) 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 a 18.3% reduction in *both* directions (e.g., from firm i to firm j and firm j to firm i). The estimate is an average effect across all instances of board overlap, even those with few labor

¹¹We 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.

flows and little incentive to coordinate on labor policies. In later tests, we show that the relationship is even larger among firm-pairs who are labor market competitors with stronger incentives to coordinate. The coefficient on the ceased overlap indicator of 0.014 suggests some persistence in hiring practices after the board overlap has ceased. The magnitude of the coefficient is small relative to the main effect of board overlap, and the coefficient is not statistically significant. This result may not be surprising considering firms that have established this form of labor market coordination through an overlapping board member will likely find it mutually beneficial to maintain the status quo even after the board member connection ceases. Overall, our main results demonstrates substantially lower employee mobility between firms following 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 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 could sharing a director lead to a reduction in employee flows between the two firms? Our results support the reduction being driven by labor market coordination that is facilitated by the connected board member. As summarized by Krueger and Ashenfelter (2022), 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 agreements not to solicit or hire each other’s employees. 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 anticompetitive labor market practices. These firms span several industries yet 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. 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. The case demonstrates the importance of retaining talent and shows that such policies to restrict employee departures are of interest to even top executives.

Even though such explicit behavior is illegal in most circumstances, there are other methods through which firms can coordinate that can be facilitated by a shared director. 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. These agreements do not stop an employee from applying for jobs, rather the firms do not actively seek to recruit from labor market competitors. In that sense, we would expect employee flows to decline but not necessarily converge to zero.

Having a shared common director can facilitate trust and enhance the efficacy of using unilateral labor agreements. The existence of a trusted intermediary can provide reassurance to both parties involved, creating an environment conducive to the implementation of such agreements. There may still be other mechanisms but given these unilateral agreements are legally permissible and that shared directors have been shown to gravitate towards similar corporate policies, it is plausible that a common director could achieve such coordination.

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. The basic prediction is that there should be a greater decrease in employee flows associated with board overlap when the benefits of coordinating (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, then examine whether the impact of board overlap is larger when firms are more likely to be competing for each other’s workers, and, finally and relatedly, 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 labor market coordination associated with board overlap to be more focused on employees who are higher-skilled, in managerial positions, or more educated.

Columns 2–8 of Table 2 display 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% ($e^{-0.265} - 1$), while low-skilled labor flow is reduced by a much more modest 12%. The difference is statistically significant with a p -value of 0.03.

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 26%, while column 5 shows that

non-manager flows are reduced by only 14% with the difference statistically significant with a p -value of 0.04.

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 19%. 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, with the difference in the relationship for the highest level of education versus the lowest level of education being statistically significant with a p -value of 0.087.

Across the specifications, the estimates of the relative change in employee flow following the cessation of overlap are relatively weak, 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 should differ significantly 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 the human-capital relatedness measure 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* ≥ 0.33), are headquartered in the same commuting zone, and have above-median occupational overlap (*Human Capital Relatedness* ≥ 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. More than 50% of its workforce is located in the headquarters state for the average firm in our sample, 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.¹² 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 100% and over 90% 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

¹²In untabulated tests, we find that for 73% of firms, their headquarters state is the state with the greatest proportion of workers.

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 53% 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 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*), though the magnitude of the coefficient is relatively smaller. 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 greater flow of employees between them. The economic magnitude is large, with the coefficient estimate implying that for a one standard deviation increase in lagged flows from the mean, the effect of board overlap increases by about 5%.

The lagged flows measure may capture variation in firm size as well as the labor market

competition between firms. To adjust for baseline differences in firm size, we compute an alternative measure that is the share of employees that left the origin firm i for destination firm j divided by the total number of employees that left the origin firm i over the previous three years (which we standardize). 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 27% greater reduction in flows with board member overlap.

Overall, the results in Table 4 suggest that the decrease in employee flows following board overlap is particularly pronounced under circumstances where the coordination benefits are most significant. These results control for the geographical and occupational proximity, as well as general labor flows to and from each firm each year, which better 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.¹³ 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 -0.194 with a p -value < 0.01. When firms compete in a similar product market space, the effects of board overlap on employee flows are larger. In columns 2 and 3, we examine whether the employee flow-board overlap relationship is especially strong for firm pairs who

¹³Deloitte, 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*).

are both in the same product market and competing in the same labor market. We see the triple interaction terms in columns 2 and 3 are large (-0.89 and -0.65) and statistically significant at the 1% level. The estimates in column 2 (3) imply that for firms in the same product and labor market, the impact of board overlap is a 59% (48%) 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.

4.3 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 increase switching costs for employees through contracting by using non-compete agreements. Formal non-compete agreements and informal coordination through overlapping board members may be substitutes. 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, 2023; Starr et al., 2021).

In particular, we test whether there is a weaker relationship between same-labor-market board overlap and employee flows when the firms are located in states with greater enforceability of non-compete clauses (CNCs). The main coefficient of interest is on the interaction between board overlap, the same labor market indicator, and the state-level CNC index from Bai et al. (2023). The index in our sample ranges from 0 to 9, where a higher value indicates a greater degree of enforcement. This test allows us to difference out potential omitted variables related to both board overlap and employee flows – as long

as the omitted variable is not also related to state-level non-compete agreement policies – and examine how the board overlap-employee flow is related to the firms’ ability to retain employees. For instance, there may be concerns that a shared board member is substituting for the hiring of the other firm’s employees by providing the requisite knowledge and human capital themselves. The substitutability of a board member for other workers should not differ across states, allowing us to difference out this and other such related concerns

In Table 6, we present the results. We present separate results for each “same labor market” indicator variable.¹⁴ 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 (greater enforceability) from the mean leads to about a 50% relative reduction in the effect of board overlap on employee flows among firms in the same labor market. These tests provide further evidence that firms more often use the board connection 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.

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

¹⁴We 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.

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 the human capital relatedness measure of Lee et al. (2018). 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 (see Appendix Table A1) in our main specification. We find 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 re-running 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 A1).

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 have flow observations 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 A1, 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 result in 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.

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).¹⁵ 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 A1, 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.

4.5 Employee Exit Rates

Our previous results document a significant reduction in employee flows between two firms connected through their board. In this section, we examine whether there is an overall stifling of employee mobility at the firm level associated with board overlap. Documenting whether board overlap results in lower firm-level turnover rates will shed light on the costs and benefits to firms and workers from coordinating in the labor market.

We examine individual employee exit rates using individual-firm-year level data and

¹⁵We thank Amir Amel-Zadeh, Fiona Kasperk, and Martin Schmalz for providing the data. Please see Amel-Zadeh et al. (2022) and www.ownershipproject.com for further details.

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 function that takes the value of one hundred if individual i departs firm f in year y , zero otherwise. Scaling the indicator variable by one hundred allows the point estimate to be interpreted as a percentage 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 various combinations of occupation, location (CBSA), and year fixed effects. Differing slightly from the previous analysis, we use the entire set of publicly-traded firms in the employee flow database (i.e., we don't condition on firm size or firm-pair flows). Doing so allows us to more accurately capture individual exit rates, while also controlling for time-varying location and occupation trends in the broader sample.

Table 7 presents the results of this analysis. In column 1, we include the set of individual, firm, occupation \times year, and CBSA \times year fixed effects. We find that each board connection is associated with a drop in the employee's exit rate by 21 basis points, relative to a mean of approximately 15 percentage points. Note, that this decreased departure rate is not conditioned on where the employees are leaving *to*, instead this is an overall reduction in the probability of leaving the firm. In column 2, we include the set of individual, firm, and occupation \times CBSA \times year fixed effects, the latter accounting for time-variation in exit rates within an occupation in a particular location. We find a similar relationship between the number of board overlaps and employee exit rates using this alternative specification.

Overall, these results suggest that the reduction in employee flows between the two connected firms is leading to an overall reduction in employee exits. A decrease in employee mobility has been shown to harm employee wage growth (Johnson, Lavetti, and Lipsitz, 2023), and sufficiently high coordination between firms on their labor resembles a degree

of monopsony which should also decrease wages (Azar, Marinescu, and Steinbaum, 2022). More closely related, theoretical and empirical evidence has shown detrimental effects of explicit anti-poaching agreements on employee outcomes, such as lower non-wage benefits, training opportunities, and flexibility (Ferrés et al., 2022). While lower mobility likely harms employees, this should benefit the connected firms due to lower turnover rates.

5 Conclusion

We find that the flow of employees between firm pairs is significantly reduced once those firms are connected through board overlap. The results are consistent with the 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 draw 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, providing 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 driving the results. Finally, we find that the overall exit rate of employees is decreasing in the number of firms that their employer is connected with via a board connection in the same labor market. 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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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).

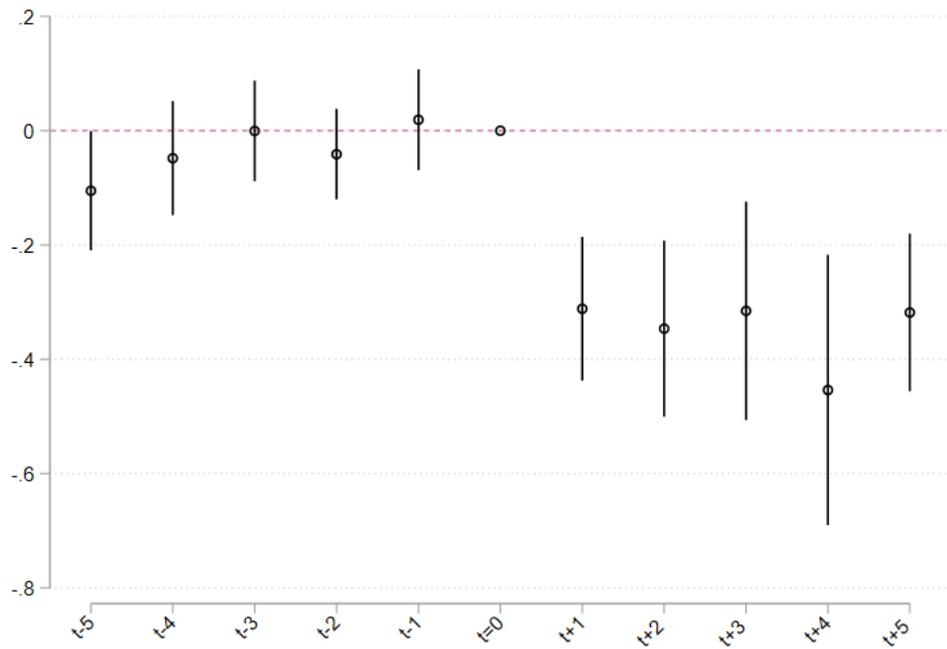


Table 1: Summary Statistics

The table presents summary statistics for our main sample, constructed from Lightcast, 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 Lightcast 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 beginning the initial year at least one director serves on both firms in that year and continuing for the rest of the sample, zero otherwise. The year of initiation is excluded. *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. (2023), where a higher value indicates a greater degree of enforcement of non-compete agreements.

	N	Mean	SD	1%	25%	Median	75%	99%
Total Flow	179,594	8.580	24.487	0.000	2.000	4.000	8.000	78.000
Board Overlap	179,594	0.014	0.118	0.000	0.000	0.000	0.000	1.000
Cease Overlap	179,594	0.005	0.067	0.000	0.000	0.000	0.000	1.000
High-skill Flow	179,594	3.880	14.392	0.000	0.000	1.000	4.000	40.000
Lower-skill Flow	179,594	3.477	9.763	0.000	0.000	1.000	4.000	35.000
Manager Flow	161,574	2.135	7.605	0.000	0.000	1.000	2.000	23.000
Non-manager Flow	161,574	7.4008	18.996	0.000	2.000	4.000	7.000	66.000
Grad. Flow	179,594	2.027	7.625	0.000	0.000	1.000	2.000	22.000
Bachelors Flow	179,594	3.188	9.710	0.000	0.000	1.000	3.000	31.000
No Bachelor Flow	179,594	3.367	9.301	0.000	0.000	1.000	3.000	32.000
Employment Ratio	174,195	0.312	0.273	0.005	0.085	0.219	0.492	0.974
Same HQ Commuting Zone	179,594	0.087	0.281	0.000	0.000	0.000	0.000	1.000
Same HQ State	179,594	0.116	0.321	0.000	0.000	0.000	0.000	1.000
Human Capital Relatedness	171,639	0.570	0.238	0.104	0.370	0.585	0.778	0.960
Same Labor Mkt 1	179,594	0.026	0.159	0.000	0.000	0.000	0.000	1.000
Same Labor Mkt 2	179,594	0.035	0.184	0.000	0.000	0.000	0.000	1.000
Lag3 Employee Flows	179,560	24.118	62.072	0.000	6.000	12.000	22.000	219.000
Lag3 Employee Flows (% of All Exit)	179,546	0.445	1.432	0.000	0.049	0.142	0.389	4.239
Product Mkt Similarity	179,594	0.052	0.072	0.000	0.000	0.018	0.082	0.285
Same Product Mkt	179,594	0.379	0.485	0.000	0.000	0.000	1.000	1.000
CNC Index	160,250	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	0.255*** (0.005)					
Same HQ Commuting Zone		0.504*** (0.070)				
Same HQ State			0.315*** (0.065)			
Human Capital Relatedness				0.771*** (0.037)		
Same Labor Mkt 1					0.782*** (0.077)	
Same Labor Mkt 2						0.676*** (0.054)
Observations	174,073	179,584	179,584	171,537	179,584	179,584
<i>Pseudo-R</i> ²	0.406	0.390	0.386	0.543	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 beginning the initial year at least one director serves on both firms in that year and continuing for the rest of the sample, zero otherwise. The year of initiation is excluded. *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	-0.109*** (0.027)	-0.120*** (0.028)	-0.136*** (0.033)	-0.135*** (0.027)
Same Labor Mkt 1	0.031 (0.043)			
Board Overlap Ind \times Same Labor Mkt 1	-0.758*** (0.163)			
Same Labor Mkt 2		-0.005 (0.039)		
Board Overlap Ind \times Same Labor Mkt 2		-0.540*** (0.143)		
Lag Employee Flows			0.020** (0.008)	
Board Overlap \times Lag Employee Flows			-0.048*** (0.007)	
Lag Employee Flows (% Exit)				0.234*** (0.025)
Board Overlap \times Lag Employee Flows (% Exit)				-0.312*** (0.081)
Cease Overlap	-0.008 (0.043)	-0.005 (0.043)	0.000 (0.044)	-0.002 (0.041)
Observations	179,588	179,587	179,507	179,520
<i>Pseudo-R</i> ²	0.758	0.758	0.758	0.759
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 beginning the initial year at least one director serves on both firms in that year and continuing for the rest of the sample, zero otherwise. The year of initiation is excluded. *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)
	Total Flow		
Board Overlap	-0.123*** (0.033)	-0.094*** (0.032)	-0.105*** (0.033)
Same Product Mkt	0.005 (0.009)	0.009 (0.009)	0.010 (0.009)
Board Overlap × Same Product Mkt	-0.194*** (0.066)	-0.025 (0.047)	-0.027 (0.049)
Same Product Mkt × Same Labor Mkt		-0.113** (0.047)	-0.109*** (0.042)
Same Labor Mkt		0.115* (0.059)	0.072 (0.050)
Board Overlap × Same Labor Mkt		0.021 (0.201)	-0.005 (0.123)
Board Overlap × Same Product Mkt × Same Labor Mkt		-0.890*** (0.251)	-0.650*** (0.180)
Cease Overlap	0.000 (0.044)	-0.017 (0.043)	-0.009 (0.043)
Labor Market Definition	-	1	2
Observations	179,580	179,565	179,566
<i>Pseudo-R</i> ²	0.758	0.758	0.758
Origin-Firm-Year FE	Yes	Yes	Yes
Destination-Firm-Year FE	Yes	Yes	Yes
Origin-Destination FE	Yes	Yes	Yes

Table 6: **Board Overlap and Employment Flows Across Non-Competes**

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 beginning the initial year at least one director serves on both firms in that year and continuing for the rest of the sample, zero otherwise. The year of initiation is excluded. *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. (2023), 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)
	Total Flow	
Board Overlap	-0.099 (0.070)	-0.137* (0.072)
Same Labor Mkt	0.006 (0.070)	-0.022 (0.051)
Board Overlap Ind \times Same Labor Mkt	-0.835*** (0.206)	-0.581*** (0.178)
Board Overlap Ind \times CNC Index	-0.003 (0.014)	0.004 (0.014)
Same Labor Mkt \times CNC Index	-0.009 (0.020)	-0.007 (0.018)
Board Overlap Ind \times Same Labor Mkt \times CNC Index	0.122** (0.044)	0.088** (0.037)
Cease Overlap	0.026 (0.042)	0.029 (0.042)
Labor Market Definition	1	2
Observations	158,674	158,674
<i>Pseudo-R</i> ²	0.753	0.753
Origin-Firm-Year FE	Yes	Yes
Destination-Firm-Year FE	Yes	Yes
Origin-Destination FE	Yes	Yes

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

This table examines how employee exit rates are related to board overlap occurring in the same labor market. 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. We then multiply the indicator by 100 for ease of interpretation. Scaling the indicator variable by one hundred allows the point estimate to be interpreted as a percentage 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 for this sample, in order to account for individual-level exit rates and local employee and firm behavior. We include individual, firm, occupation, and location fixed effects 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)
	Employee Exit Likelihood (%)	
Total Board Overlaps	-0.212*** (0.058)	-0.215*** (0.058)
Observations	106,722,769	105,547,371
R^2	0.142	0.142
Individual FE	Yes	Yes
Firm FE	Yes	Yes
Occupations \times Year FE	Yes	No
CBSA \times Year FE	Yes	No
Occupation \times CBSA \times Year FE	No	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 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 firm-pair level and 95% confidence intervals are displayed in the figure. We correct coefficients and standard errors according to Weidner and Zylkin (2021).

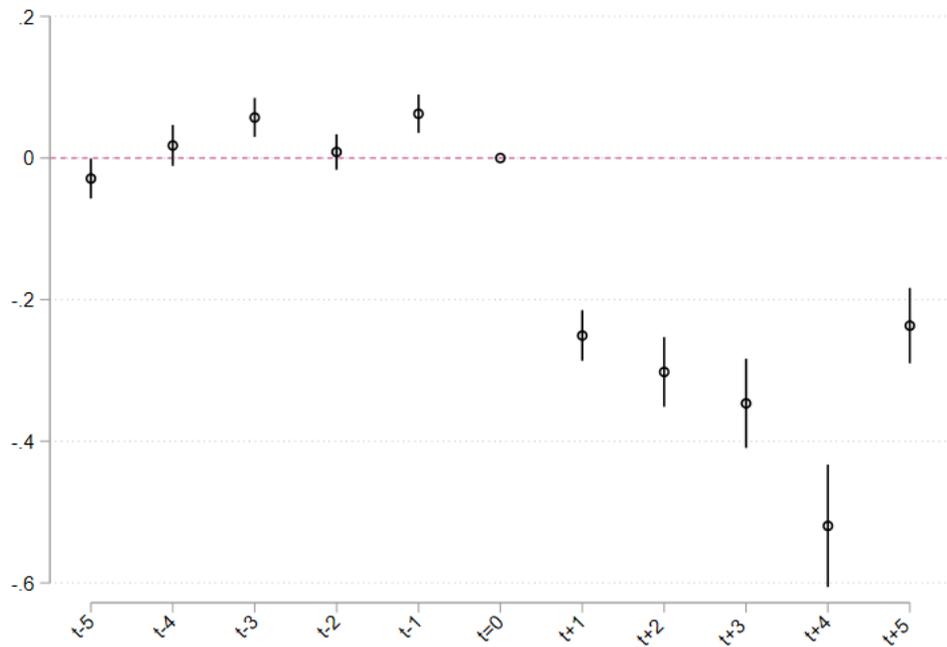
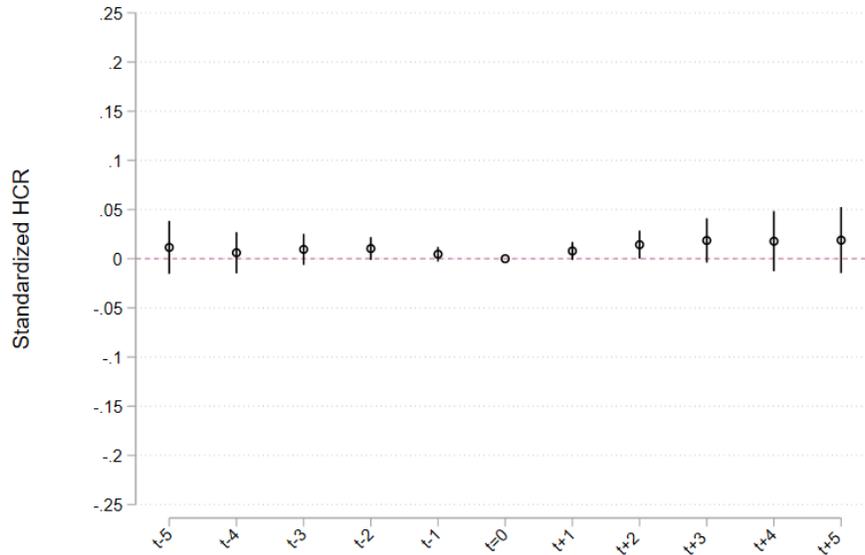


Figure A2: Dynamic Effects of Board Overlap - Similarity Measures

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

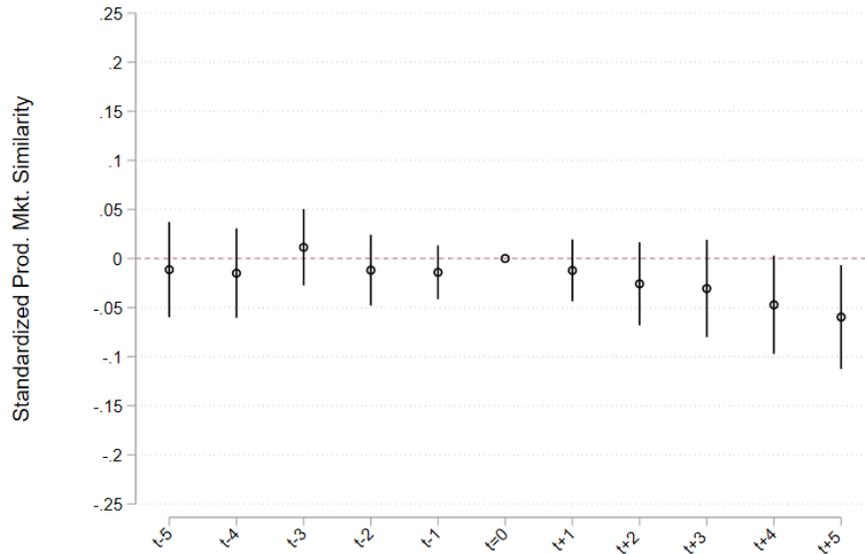


Figure A3: **Dynamic Effects of Board Overlap - Common Ownership**

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).

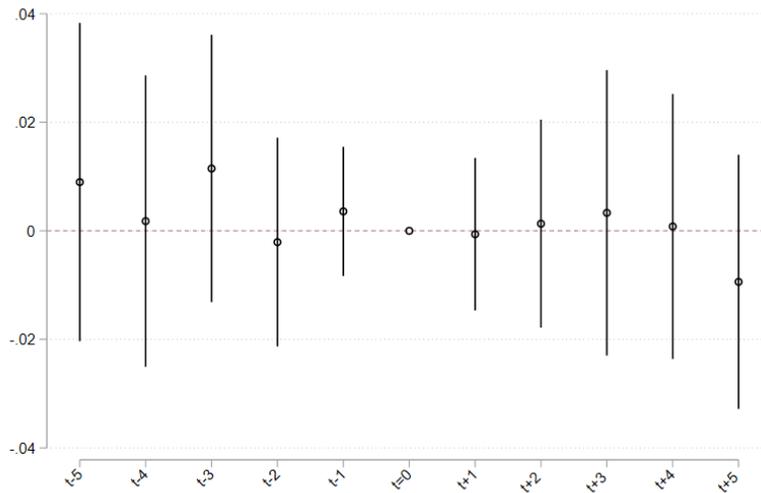


Table A1: **Board Overlap and Employment Flow Effects - Robustness**

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 beginning the initial year at least one director serves on both firms in that year and continuing for the rest of the sample, zero otherwise. The year of initiation is excluded. 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*** (0.035)	-0.105** (0.044)	-0.193*** (0.038)	-0.112*** (0.035)
Product Mkt Similarity	0.034 (0.097)			
Human Capital Relatedness	1.326*** (0.121)			
Common Ownership				0.098** (0.049)
Cease Overlap	0.013 (0.041)	0.026 (0.072)	0.035 (0.043)	0.033 (0.059)
Subset?	No	No Product Market Competition	No M&A Firm-Pairs	No
Observations	172,117	66,400	176,516	57,676
<i>Pseudo-R</i> ²	0.759	0.759	0.753	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