

# Workforce Mobility and Corporate Misconduct: The Governance Effects of Noncompete Agreements \*

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**Abstract** – This paper examines how state-level enforceability of non-compete agreements (NCAs) affects corporate misconduct. Leveraging establishment-level data and within-firm variation in NCA exposure, we find that stricter enforcement significantly reduces misconduct, particularly in settings where labor turnover is more costly. Further analysis shows that NCAs restrict employee mobility and heighten unemployment risk, reinforcing their role in shaping workplace discipline and incentives. Together, these results uncover an unintended governance benefit of NCA enforceability and underscore the importance of workforce stability in mitigating misconducts.

**Keywords:** Noncompetes; Labor mobility; Corporate misconduct

**JEL classification:** E24; J63; L1; M54

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# 1 Introduction

Human capital is a critical determinant of firm productivity (Zingales, 2000), yet it remains only partially within a firm’s control (Becker, 1962), posing enduring governance challenges related to its retention, development, and effective utilization (Donangelo, 2014). Firms must continuously balance the benefits of investing in talent against the risk of losing it to competitors—a tension that has become increasingly pronounced in today’s dynamic labor markets. As competition for skilled workers intensifies and concerns over industry concentration rise, these challenges have reignited interest in noncompete agreements (NCAs)—contractual clauses that restrict workers from joining rival firms.<sup>1</sup> While proponents contend that NCAs help firms retain talent and safeguard proprietary knowledge, critics argue that they suppress competition, limit labor mobility, and diminish employee welfare (Marx, 2011; Starr et al., 2021; Balasubramanian et al., 2022). This paper contributes to the ongoing debate by examining a relatively understudied governance dimension of NCAs: their impact on corporate misconduct.

The effect of non-compete agreement (NCA) enforceability on corporate misconduct is theoretically ambiguous. Since human capital is inalienable (Hart and Moore, 1994) and contracts are inherently incomplete (Hart, 2017), firms face risks that trained employees may transfer proprietary knowledge to competitors (Becker, 1962; Rajan and Zingales, 2001). NCAs mitigate this risk by restricting labor mobility (Rubin and Shedd, 1981; Barnett and Sichelman, 2020), encouraging firms to invest in employee training and development (Hart and Moore, 1990). These investments enhance employee competence and offer legitimate paths to success—through promotions, bonuses, and skill acquisition—therefore reducing the appeal of unethical shortcuts. According to the rational choice model of misconduct (Becker, 1968), individuals weigh the expected benefits of wrongdoing against its potential

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<sup>1</sup>For example, in 2016 the White House issued a report titled *Non-Compete Agreements: Analysis of the Usage, Potential Issues, and State Responses*. Bipartisan legislative initiatives followed, including the Workforce Mobility Act (S. 2782, 115th Congress) introduced in 2018 and reintroduced in 2023, and the Freedom to Compete Act (S. 124, 116th Congress) in 2019. Most recently, in 2023, the Federal Trade Commission proposed a rule to ban noncompete clauses nationwide.

costs. When NCAs foster great human capital investment, the perceived utility of engaging in misconduct declines, thereby deterring unethical behavior.

Additionally, NCA enforceability raises the cost of job loss of employees by increasing unemployment risks. In the efficiency wage model ([Shapiro and Stiglitz, 1984](#)), unemployment acts as a disciplinary device in settings with imperfect monitoring, where worker effort is not fully observable and shirking is only detected probabilistically. Stronger NCAs restrict labor mobility, thereby extending the expected duration of unemployment and increasing its cost. This heightens the disciplinary effect of unemployment, strengthening incentives for employee compliance and reducing misconduct. We refer to the combination of these two effects as the “Stability and Discipline” channel.

On the other hand, stronger NCA enforceability may suppress wage competition among employers, leading to stagnant or lower wages ([Marx et al., 2009](#); [Balasubramanian et al., 2022](#)). Under the fair wage-effort model ([Akerlof and Yellen, 1990](#)), employee effort is influenced by perceived wage fairness. When actual wages fall below this benchmark, workers may reduce effort or engage in retaliatory behavior. In environments with imperfect monitoring, such disengagement can manifest as misconduct—such as misreporting or cutting corners. Even small deviations from fair wages can erode morale, trigger loss aversion, and foster unethical behavior. By limiting labor mobility, NCAs exacerbate wage suppression and activate what we refer to as the “Disengagement Channel”, through which perceived wage unfairness increases the risk of misconduct.

This paper examines how NCA enforceability affects corporate misconduct at the establishment level. We exploit state-level variation in NCA enforcement and link it to granular misconduct records from Violation Tracker and establishment data from the Your-Economy Time Series (YTS). Because NCA enforcement is determined by the location of employment rather than the firm’s headquarters, our identification strategy isolates the NCA effect within firm-year observations but across establishments. This approach addresses endogeneity concerns by comparing establishments within the same firm—subject to similar governance,

oversight, and incentive structures—yet differentially exposed to NCA enforceability through their geographic location.

Our primary sample comprises firms with at least one establishment that incurred a regulatory violation between 2000 and 2024, along with their affiliated non-violating establishments. We find that stricter NCA enforceability is associated with a statistically significant reduction in corporate misconduct, supporting the dominance of the “Stability and Discipline” channel. In our within firm-year analysis, a one-standard deviation increase in state-level NCA enforceability is associated with a 8.9% decline relative to the mean outcome. The effect is robust across cross-sectional, within-firm, and within-firm-year specifications. The results also remain statistically significant when (i) including all firms regardless of violation history, (ii) using alternative measures of NCA enforceability, (iii) excluding states with low-wage NCA bans, and (iv) controlling for strategic location choices.

Additionally, we find that stronger NCA enforcement is associated with lower monetary penalties for misconduct. This may reflect not only a reduction in the frequency of violations but also a shift toward less severe forms of misconduct, resulting in smaller financial sanctions when violations occur. We also show that the effect of NCA on misconduct remains significant across violation types, including environmental-related violations, and workplace safety violations.

After validating the robustness of our baseline results, we next examine factors that may amplify or attenuate the deterrent effect of NCAs on corporate misconduct. The Stability and Discipline Channel posits that the effectiveness of NCAs depends on the magnitude of labor turnover costs borne by both firms and employees. When firms face high turnover costs, the enforcement of NCAs becomes more influential on firm investments, as it helps retain skilled employees and protect firm investments, strengthening their deterrent effect on misconduct. Conversely, when employees face low turnover costs, the restrictive effect of NCAs on mobility becomes weaker, diminishing their disciplinary power on employee incentives. To empirically examine these dynamics, we focus on three key dimensions that

proxy for labor turnover costs on both sides of the employment relationship: wages, training intensity, and labor–technology substitutability.

To capture labor turnover costs from the employee’s perspective, we use wage distribution data from [Clemens et al. \(2018\)](#) and [Bates et al. \(2025\)](#). Lower wages reduce the opportunity cost of dismissal, leading employees to perceive fewer consequences from job loss and thereby weakening the disciplinary effect of NCA enforceability. Consistent with this prediction, we find that the deterrent effect of NCAs is significantly weaker in low-wage environments.

From the firm’s perspective, we focus on two components of labor turnover costs: training intensity and labor substitutability. Firms with limited training needs face lower separation costs, as replacing employees is less costly. We proxy for training intensity using two measures: (i) occupation-level training and preparation requirements from [Belo et al. \(2014\)](#), and (ii) a textual analysis of state statutes identifying whether employee training is recognized as a protectable business interest. Across both measures, the deterrent effect of NCAs on misconduct is stronger (weaker) when training is more (less) salient to firms.

Finally, we examine labor substitutability as an additional proxy for firm-side turnover costs. When workers are easily replaceable—particularly through automation—labor mobility poses fewer operational risks to firms. We test this using two industry-level measures of technological substitutability: the share of routine-task employment from [Zhang \(2019\)](#) and the degree of substitutability by automated capital from [Bates et al. \(2025\)](#). Consistent with our prediction, we find that in industries where labor can be more readily replaced by technology, the deterrent effect of NCA enforceability on misconduct is significantly weaker.

In the final part of the paper, we examine the mechanisms through which stronger enforcement of non-compete agreements (NCAs) reduces corporate misconduct. Under the Stability and Discipline channel, NCAs deter misconduct by limiting labor turnover, thereby encouraging firms to invest in employee training and development that enhance commitment, performance, and compliance—ultimately lowering the likelihood of violations. In addition,

stronger NCA enforceability increases employees’ unemployment risk. Faced with a higher risk of job loss, employees have stronger incentives to adhere to firm policies and avoid misconduct. To test these mechanisms, we analyze the effects of NCA enforcement on labor turnover and unemployment risk.

We first examine job mobility using Job-to-Job (J2J) flow data from the U.S. Census Bureau’s Longitudinal Employer–Household Dynamics (LEHD) program. Specifically, we study the annual growth rate of direct job transitions—movements between employers within the same year. Focusing on within-state, within-industry flows, consistent with how NCA enforceability is determined, we find that job-to-job transitions decline significantly following stronger NCA enforcement, consistent with reduced labor mobility and greater workplace stability.

Next, we assess whether stronger NCA enforcement increases unemployment risk. Using Local Area Unemployment Statistics (LAUS) from the U.S. Bureau of Labor Statistics, we find that stricter enforcement significantly elevates local unemployment risk. This evidence is inconsistent with the “loophole” hypothesis of NCA enforcement; for instance, although NCAs exist in Florida, an employee initially hired there could theoretically relocate to California, where NCAs are generally unenforceable. Since we show that stronger enforcement is empirically associated with higher unemployment risk, such cross-state mobility loopholes appear unlikely to offset the restrictive impact of NCAs on labor mobility.

Overall, our findings reveal a significant negative relationship between NCA enforceability and corporate misconduct, supporting the dominance of the Stability and Discipline channel. The deterrent effect is stronger when labor turnover is more costly. Moreover, we provide channel evidence that stricter NCA enforcement is associated with reduced labor turnover and heightened unemployment risk, which is inconsistent with the “loophole” hypothesis that assumes employees can readily circumvent NCAs by transferring across state lines.

Our study contributes to several strands of literature. First, we extend the burgeoning research on NCAs, which has largely focused on labor market dynamics and corporate performance (see [McAdams \(2019\)](#) for a comprehensive review). Within the domain of firm policies and performance, prior work has examined the effects of NCAs on capital structure ([Ysmailov, 2024](#)), investment decisions ([Conti, 2014](#); [Jeffers, 2024](#); [Bai et al., 2024](#)), innovation ([Johnson et al., 2023](#); [Reinmuth and Rockall, 2024](#); [He, 2025](#)), and financial reporting ([Chen et al., 2018](#); [Aobdia, 2018](#)). We contribute to this literature by introducing a novel outcome: the effect of NCA enforceability on corporate misconduct. By linking labor market restrictions to workplace stability, disciplinary mechanisms, and ethical behavior, we broaden the understanding of NCAs beyond traditional performance metrics to governance and compliance outcomes. Our findings also inform the ongoing policy debate surrounding the Federal Trade Commission’s proposed ban on NCAs.<sup>2</sup>

Furthermore, prior research on NCAs has largely focused on executives and their career trajectories ([Garmaise, 2011](#); [Ertimur et al., 2018](#); [Kini et al., 2021](#); [Gao et al., 2023](#)). Building on [Jeffers \(2024\)](#), who show that stronger NCA enforceability reduces turnover and increases investment in knowledge-intensive firms, we provide establishment-level evidence that NCAs also have significant effects on rank-and-file employees.

Second, we contribute to the corporate misconduct literature by emphasizing non-financial violations. While earlier studies focused primarily on financial wrongdoing,<sup>3</sup> recent research has expanded to safety and environmental infractions, examining how misconduct is shaped by external pressures such as social media ([Heese et al., 2022](#); [Heese and Pacelli, 2024](#)) and product market competition ([Chen et al., 2024a](#)), as well as internal governance factors like board independence ([Zaman et al., 2021](#)), institutional ownership ([Li and Raghunandan, 2021](#)), and CEO incentives ([Heese and Pérez-Cavazos, 2020](#); [Chircop et al., 2025](#)). We extend this literature by showing that enforceable NCAs—by restricting rank-and-file

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<sup>2</sup>See [FTC Announces Rule Banning Noncompetes \(2024\)](#).

<sup>3</sup>See [Reurink \(2018\)](#), [Amiram et al. \(2018\)](#), [Cole et al. \(2021\)](#).

employee mobility—are associated with lower levels of misconduct, suggesting that workforce stability can deter unethical behavior.

The rest of the paper is organized as follows. Section 2 briefly explores the theoretical background. Section 3 describes the institutional background and the legal framework governing NCA enforceability as well as the sample construction and variable definitions. Section 4 presents and discusses the effect of NCAs on corporate misconduct. Section 5 investigates the moderating factors for the effect of enforcement restriction on NCA. Section 6 investigates the underlying mechanisms. Finally, Section 7 concludes.

## 2 Hypothesis Development

Building on the theoretical foundations, we develop a set of hypotheses regarding how NCAs influence corporate misconduct. We propose that NCAs influence corporate misconduct through two competing mechanisms: the Stability and Discipline Channel and the Disengagement Channel.

### 2.1 Stability and Discipline Channel

The first mechanism suggests that NCAs can reduce corporate misconduct by encouraging firm investment in human capital and increasing the cost of job loss. Owing to the inalienability of human capital (Hart and Moore, 1994) and the inherent incompleteness of employment contracts (Hart, 2017), firms face the risk that trained employees may transfer proprietary knowledge to competitors (Becker, 1962; Rajan and Zingales, 2001). By restricting labor mobility, NCAs mitigate this risk (Rubin and Shedd, 1981; Barnett and Sichelman, 2020), enabling firms to safeguard and recoup their investments in employee training and development (Hart and Moore, 1990).

These investments enhance employee competence and provide legitimate pathways to success—such as promotions, bonuses, and skill acquisition—reducing the appeal of uneth-



ical shortcuts. According to the rational choice model of crime ([Becker, 1968](#)), individuals engage in misconduct when the expected benefits outweigh the expected costs, which include the expected benefit of misconducts and severity of punishment. Training and development reduce the perceived benefits of misconduct by offering alternative rewards and increasing awareness of consequences. As employees become more skilled and valued, the incremental gain from unethical behavior diminishes, shifting the expected utility of misconduct into the negative domain.

In addition to reducing the attractiveness of misconduct, NCAs also heighten the cost of job loss. The efficiency wage model ([Shapiro and Stiglitz, 1984](#)) posits that unemployment serves as a disciplinary device in environments with imperfect monitoring, where effort is not fully observable and shirking is detected only probabilistically. To deter shirking, firms must ensure that the expected utility of diligent work exceeds that of misconduct. NCAs, by limiting outside job opportunities, extend the expected duration of unemployment and increase its cost, amplifies the disciplinary effect: employees are more likely to comply with rules and avoid misconduct when the consequences of dismissal are severe.

Taken together, these dynamics form the Stability and Discipline Channel, through which NCAs reduce misconduct by encouraging firm-level investments in human capital and increasing the cost of non-compliance for employees.

## 2.2 Disengagement Channel

On the other hand, stronger NCA enforceability may suppress wage competition among employers, leading to stagnant or lower wages ([Marx et al., 2009](#); [Balasubramanian et al., 2022](#)). Under the fair wage-effort model ([Akerlof and Yellen, 1990](#)), employee effort is shaped not only by contractual terms but also by perceived wage fairness. Workers compare their actual wage to a reference “fair” wage, and when compensation falls short, they may reduce effort or engage in retaliatory behavior. In environments with imperfect monitoring—where

effort and misconduct are difficult to observe—this disengagement can manifest as unethical actions such as misreporting, cutting corners, or other violations.

The Akerlof-Yellen framework emphasizes that effort declines continuously with the perceived wage gap. Even small deviations from fairness can erode morale, trigger loss aversion, and foster moral disengagement, where employees rationalize misconduct as a response to perceived exploitation. NCAs, by limiting labor mobility, reduce outside options and bargaining power of employees, making it easier for firms to offer below-market wages. This exacerbates perceptions of unfairness and activates what we refer to as the Disengagement Channel—a mechanism through which wage suppression, driven by NCA enforceability, increases the risk of misconduct.

In summary, while the Stability and Discipline Channel suggests that NCAs reduce misconduct by raising the cost of job loss and encouraging investment in employee development, the Disengagement Channel highlights the opposite risk: that NCAs may weaken employee bargaining power, suppress wages, and erode fairness perceptions, thereby increasing misconduct through psychological withdrawal or retaliatory behavior.

**H1-a:** *If the “Stability and Discipline” channel is dominant, NCAs enforceability is negatively associated with the incidence of corporate misconduct.*

**H1-b:** *If the “Disengagement” channel is dominant, NCAs enforceability is positively associated with the incidence of corporate misconduct.*

### 3 Data and Empirical Strategy

This section begins by outlining the institutional background of the state-level NCA enforceability, then describes the construction of our sample, and finally details the empirical methodology used to analyze the NCA effects.

### 3.1 State-level NCA enforceability - Institutional background

Noncompete agreements (NCAs), also known as covenants not to compete, are contractual provisions that limit employees from joining or establishing competing firms within a specified geographic area for a defined period, typically ranging from one to two years after leaving their positions. These agreements primarily serve to protect an employer’s legitimate business interests, such as safeguarding trade secrets, confidential information (e.g., business relationships, customer data), and training and education (Marx et al., 2009; Bai et al., 2024).

NCA enforcement is determined by state-level employment law, typically limiting their applicability to a firm’s operating region or a narrowly defined geographic area. Enforcement practices vary considerably across states: in some, NCAs are governed by statute; in others, by judicial precedent. Each state applies its own standards to assess the reasonableness of an NCA’s scope. At one extreme, California and North Dakota have banned NCAs, while at the other extreme, Florida has been one of the strongest enforcement states since 1997. Florida permits the enforcement of NCAs even for employees who are laid off, prohibits courts from considering employee hardship, and allows employers to obtain an injunction in cases of noncompetes violations.

Employers widely use NCAs across various employee categories. Although systematic data on the use of noncompetes among U.S. workers is not readily available, a comprehensive 2014 survey by Starr et al. (2021) found that approximately 18% of labor force participants (nearly 30 million people) are bound by noncompetes at the time of the survey, with two-fifths having agreed to at least one NCA during their careers. These agreements are particularly common in positions requiring specialized skills and knowledge, such as top executives (Garmaise, 2011; Kini et al., 2021), scientists and technology workers (Marx, 2011; Balasubramanian et al., 2022), and inventors (Marx et al., 2009; He, 2025), though they also extend to less skilled roles. Approximately 15% of workers without a college degree and 14% of those

earning less than \$40,000 are bound by NCAs (White House, 2016).<sup>4</sup> Additional evidence of NCA use in low-wage, low-skill occupations is documented in Ellis and Cutter (2024).

The primary reason NCAs affect employee mobility is their deterrence effect: employees are often reluctant to switch jobs for fear of violating their contracts. Specifically, employees accused of violating an NCA may face legal action from their former employers. Depending on state law, employers may need to present a signed agreement, explicit evidence of harm, or rely on legal precedents that consider continued employment sufficient consideration for a valid NCA. Moreover, lawsuits can extend to the new employer, holding both parties liable for damages and potentially forcing the termination of the employee’s new position. As the litigation risk increases, firms may become more hesitant to hire workers bound by such agreements. This growing trend is evident in the data: in 2000, the annual number of published U.S. court decisions involving NCAs was 563, peaking at 1,311 in 2020 and remaining at 1,060 in 2024, with an average of over 1,000 cases annually from 2000 to 2024.<sup>5</sup>

### 3.2 Data and Sample

Since NCA enforcement falls under state-level employment law, the relevant jurisdiction is the state in which the employee works (Kini et al., 2021; Bai et al., 2024). Given that firms operate across multiple locations (Garcia and Norli (2012)), we obtain establishment-level data from the Your-Economy Time Series (YTS) database, which provides annual information on establishments, including their locations, employee counts, and parent firm affiliations.<sup>6</sup> To obtain financial data for parent firms, we merge YTS with Compustat using the CIKs and/or TICKER provided in YTS, supplemented by firm name matching.<sup>7</sup>

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<sup>4</sup>[https://obamawhitehouse.archives.gov/sites/default/files/non-competes\\_report\\_final2.pdf](https://obamawhitehouse.archives.gov/sites/default/files/non-competes_report_final2.pdf)

<sup>5</sup>See New Trade Secret and Noncompete Case Growth Graph (Updated January 2025).

<sup>6</sup>YTS is maintained by the Business Dynamics Research Consortium (BDRC) at the University of Wisconsin and is widely used in the literature (see, e.g., Campello et al. (2022a), Campello et al. (2022b), Ghent (2021), Arefeva et al. (2024), Lee et al. (2024), Flynn and Ghent (2024)).

<sup>7</sup>We merge establishments from YTS with their corresponding parent firms in Compustat using a two-step procedure. First, we match YTS ultimate parent firms to Compustat using the CIK and/or TICKER identifiers. Second, for unmatched firms, we match based on headquarters names, manually verified using additional location details such as state, county, and ZIP code.

We obtain corporate misconduct data from Violation Tracker, a database maintained by the Corporate Research Project of Good Jobs First.<sup>8</sup> This dataset aggregates records from over 40 federal regulatory agencies and includes more than 440,000 civil and criminal cases during the sample period, covering safety-related offenses, environmental violations, financial misconduct, and other regulatory breaches.<sup>9</sup> For local macroeconomic conditions, we obtain county-level labor force data from the Bureau of Labor Statistics (BLS) and personal income per capita from the Bureau of Economic Analysis (BEA).

Our final sample for the main analysis includes all establishments whose public parent firm has at least one violation record during the sample period.<sup>10</sup> We exclude establishments in the financial sector (SIC codes 6000–6999), the utility sector (SIC codes 4900–4999), public administration (SIC codes 9100–9729), and non-classifiable sectors (SIC codes 9900–9999). Our sample period begins in 2000, the first year covered by Violation Tracker, and ends in 2024.

As shown in Table 1, we report the frequency of violations and the corresponding dollar amounts of penalties for each infraction. Our sample comprises over 30,000 violation records spanning from 2000 to 2024, with total penalties exceeding \$64,000 million. Panel A presents the distribution of violations by year. On average, each violator is involved in 1.52 misconduct records annually, with average penalties of approximately \$2.57 million per violator. Corporate misconduct showed a rising trend until 2011, reaching a peak of 1,955 recorded cases. This was followed by a decline through 2020, before rising again to a new peak of 2,055 cases in 2022. The highest annual total penalty amounts, exceeding \$4,000 million, occurred in 2024. Panel B highlights that violations are predominantly concentrated in the manufacturing sector, both in terms of total frequency and severity. Specifically, the

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<sup>8</sup>We merge YTS with Violation Tracker based on establishment names, manually verifying matches using location details such as state and address information from both datasets.

<sup>9</sup>Violation Tracker excludes violations with penalties or settlements below \$5,000, so the number of unique firms before this threshold removal is not observable.

<sup>10</sup>As noted by Heese et al. (2022), to address concerns that systematic differences between violators and non-violators may influence our results, we conduct a robustness test by including non-violator parent firms and re-running our primary analysis over the sample period.

manufacturing sector accounts for approximately 40% of the total misconduct records and monetary penalties. At the establishment level, the mining industry records the highest number of violations per establishment, while the services industry incurs the highest penalty amount per establishment.

Insert Table 1 here

### 3.3 Variables

#### 3.3.1 Dependent Variable: Violation

Consistent with prior research (e.g., [Campbell and Shang \(2022\)](#); [Heese et al. \(2022\)](#); [Raghunandan \(2024\)](#); [Chircop et al. \(2025\)](#)), we measure the incidence of corporate misconduct using the number of recorded violations (*Raw violations*) reported in Violation Tracker. To mitigate skewness in the distribution, we transform the raw violation counts by applying the natural logarithm to one plus the number of violations, and then multiply the result by 100 for ease of interpretation. This transformed measure serves as our primary dependent variable, denoted as *Violations*.

#### 3.3.2 Independent Variable: Enforceability Index of NCAs (NCI)

Although employers can require employees to sign a NCA, its enforceability is determined by state law. Each state’s courts (through legislation and case law precedent) establish the rules that define the extent and boundaries of legally enforceable NCA restrictions.

To examine the impact of NCA enforceability on corporate misconduct at the establishment level, we build on prior research that quantifies NCA enforcement across states. Specifically, [Garmaise \(2011\)](#) developed the original enforcement index based on 12 legal dimensions identified by [Malsberger \(2004\)](#), assigning one point for each dimension where a jurisdiction’s enforcement meets a specified threshold. These dimensions capture key legal considerations, such as the legitimacy of the employer’s interests, the duration and geographic

scope of the covenant, and the degree of judicial discretion to modify overly restrictive terms. The resulting NCA enforceability index (*NCI*), developed by [Garmaise \(2011\)](#), covers the period from 1992 to 2004. [Ertimur et al. \(2018\)](#) extended this index back to 1980 and forward to 2013, while [Bai et al. \(2024\)](#) further updated it through 2018 using annual legal summaries published by Beck Reed & Riden LLP.<sup>11</sup> Using the same criteria and source, we further extend the index to 2019–2024 to capture recent variation in NCA enforcement across states.<sup>12</sup>

Insert Figure 1 here

Table A2 presents the *NCI* across all 50 states, illustrating substantial geographic and temporal variation in NCA enforceability. California and North Dakota consistently report the lowest possible score (zero), reflecting minimal enforcement, while Florida reports the highest score (9 out of 12), indicating relatively strict enforcement (see in Figure 1). Several states experienced legal changes during our sample period. For instance, Vermont’s *NCI* increased from 5 to 6 in 2006, while Oregon’s *NCI* declined from 6 to 5 in 2008.<sup>13</sup>

### 3.3.3 Control Variables

Mirroring [Chen et al. \(2024b\)](#), and using the nested regression approach, we follow [Zaman et al. \(2021\)](#), [Heese et al. \(2022\)](#), and [Chircop et al. \(2025\)](#) by including a comprehensive set of control variables to account for firm-level characteristics. Specifically, we control for firm size (measured as the natural logarithm of total assets), return on assets (*ROA*, defined as earnings before interest, taxes, depreciation, and amortization divided by total assets), sales

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<sup>11</sup>[Kini et al. \(2021\)](#) also extended [Garmaise \(2011\)](#)’s index through 2014 using the same legal source.

<sup>12</sup>Each year, Beck Reed & Riden LLP survey all 50 U.S. states, documenting whether NCAs are permitted or restricted, the protectable interests covered, statutory standards and penalties, relevant exemptions (e.g., low-wage workers or specific industries), the sufficiency of continued employment as consideration, and enforceability against employees terminated without cause. For instance, in Alabama, continued employment is deemed sufficient consideration, and thus the state receives a score of 1 under this dimension.

<sup>13</sup>Importantly, these legal changes were not triggered by corporate misconduct, mitigating endogeneity concerns. Legislative shifts were primarily driven by lobbying efforts from firms and other interest groups ([Ewens and Marx \(2018\)](#)).

growth (the annual percentage change in sales), leverage (total debt divided by total assets), and asset tangibility (*PPE*, measured as net property, plant, and equipment divided by total assets).

To address potential confounding influences from local macroeconomic conditions, we also control for county-level income per capita, and labor force, following prior work such as [Garmaise \(2011\)](#), [Aobdia \(2018\)](#), [Heese et al. \(2022\)](#), [Gao et al. \(2023\)](#), [Bai et al. \(2024\)](#), and [He \(2025\)](#). To mitigate the impact of outliers, all continuous variables are winsorized at the 1<sup>th</sup> and 99<sup>th</sup> percentiles. Detailed definitions of all variables are provided in the Appendix.

### 3.4 Summary Statistics

Our final establishment-year-level sample consists of 9,033,695 observations, spanning from 2000 to 2024, and includes 1,542 unique firms and 1,055,484 unique establishments. As reported in Table 2, establishments report an average of 0.004 *Raw violations* per year, with associated monetary penalties (*Raw penalties*) averaging \$7,089. For comparison, [Heese and Pérez-Cavazos \(2020\)](#) document an average of 0.003 violations per facility-year over the 2000–2017 sample period, suggesting that our sample exhibits slightly higher incidence rates for the 2000–2024 period. The average enforceability of noncompete agreements (*NCI*) across the sample is 4.45 out of a maximum score of 12, with the 25<sup>th</sup> percentile at 3 and the 75<sup>th</sup> percentile at 6.

Insert Table 2 here



## 4 The Effect of NCAs on Corporate Misconduct

### 4.1 Baseline Regression

To examine the impact of state-level NCA enforceability on corporate misconduct, we estimate the following baseline model:

$$(1) \quad Violations_{i,j,c,l,t} = \alpha + \beta \times NCI_{lt} + \Gamma' \times X_{i,c,t-1} + FE + \varepsilon_{i,j,c,l,t}$$

where  $i$ ,  $j$ ,  $c$ ,  $l$ , and  $t$  denote firm, establishment, location (county), location (state), and year, respectively. The dependent variable,  $Violations_{i,j,c,l,t}$ , is the natural logarithm of one plus the total number of violations, multiplied by 100, incurred by firm  $i$  through its establishment  $j$ , which is located in county  $c$  of state  $l$  in year  $t$ . Our primary independent variable is the enforceability index of noncompetes ( $NCI$ ) for state  $l$  in year  $t$ . When the coefficient on this variable,  $\beta$ , is negative (positive), our evidence is consistent with Hypothesis H1-a (H1-b).

To account for potential confounding influences, we include a set of lagged firm-level control variables: *Firm Size*, *ROA*, *Sales Growth*, *Leverage*, and *PPE*. We also control for lagged county level macroeconomic conditions of establishment's location including *County Labor Force*, and *County Income Per Capita*.

Importantly, we incorporate various sets of fixed effects to rigorously account for potential confounding factors. These include combinations of firm and year fixed effects, firm and industry (3-digit SIC industry)-year fixed effects, and, in our most stringent specification, firm-year fixed effects. Firm fixed effects control for time-invariant heterogeneity across firms—such as organizational culture, baseline governance structures, and persistent operational practices—that may influence misconduct. Year fixed effects capture economy-wide temporal shocks, such as business cycles and macroeconomic conditions, including periods of economic expansion or recession. Industry-year fixed effects help account for industry-specific temporal shocks and trends, such as regulatory changes, technological advancements, or shifts in labor market dynamics, that may influence both firm policies and misconduct outcomes.

Finally, firm-year fixed effects allow us to control for within-firm variation over time, addressing changes in governance mechanisms, incentive structures, and internal policies that may directly impact the likelihood of misconduct. To address potential heteroskedasticity and serial correlation concerns, we cluster standard errors at the state-year level.

We present the estimation results in Table 3. Columns (1) and (2) report estimates from the cross-firm analysis, while Columns (3) and (4) present results from the within-firm analysis. Column (5) provides estimates from the within firm-year analysis, which represents our most stringent specification. Column (1) includes the enforceability index of noncompete agreements (*NCI*) as the sole explanatory variable. Column (2) extends the model by adding firm-level control variables. Column (3) further incorporates county-level macroeconomic conditions, along with firm and year fixed effects. Column (4) retains the same controls as Column (3), but replaces year fixed effects with industry-year fixed effects. Finally, Column (5) includes firm-year fixed effects, allowing us to control for all time-varying firm-level characteristics.

Across all specifications, the coefficient on *NCI* is consistently negative and statistically significant at the 1% level, indicating a robust inverse relationship between the enforceability of noncompete agreements and the incidence of violations. These results lend support to the “Stability and Disciplinary” channel (Hypothesis H1-a), suggesting that stronger enforcement of NCAs is associated with reduced misconduct. In terms of economic magnitude, in our most rigorous specification, Column (5), a one-standard deviation increase in state-level *NCI* corresponds to an 8.9% decline in violations relative to the mean outcome. This pattern holds consistently across all model specifications, reinforcing the robustness of the findings.

Insert Table 3 here

In Table 4, we examine the effect of *NCI* on two violation categories: environmental-related and workplace safety violations, reported in Panels A and B, respectively. In both panels, the coefficient on *NCI* is consistently negative and statistically significant at the 1%

level across all regression models, reinforcing the baseline finding that the effect holds not only for overall violations but also for these two major violation types.

Insert Table 4 here

## 4.2 Robustness Tests

In this section, we conduct a series of robustness tests to assess the effects of the enforceability index of noncompetes (*NCI*) and ensure the reliability of our main findings.

As outlined earlier, our baseline analysis focuses on parent firms with at least one affiliated establishment that recorded a violation during the sample period. Firms whose affiliated establishments show no violation records are excluded to mitigate potential systematic differences between violator and non-violator firms. To complement this approach, we replicate the baseline results from Table 3 using an expanded sample that includes both violator and non-violator firms. Panel A of Table 5 presents the results based on this broader sample, using the same specifications as in Table 3. The coefficient on *NCI* remains significantly negative, reinforcing the robustness of the negative relationship between NCA enforceability and violation frequency.

Our baseline specification employs an extended version of the *NCI*, updated through 2024. As a robustness check, we also employ the NCA index from Bishara (2011), extended by Johnson et al. (2025), which spans 2000–2014. This dataset incorporates both judicial and legislative changes to state-level NCA enforceability, coded according to criteria developed by leading legal scholars. The index is widely cited in legal studies. The inclusion of this index helps ensure that our findings are not driven by the construction of any single index.<sup>14</sup> Panel B of Table 5 shows that the results remain consistent when using these alternative measures and sample periods.

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<sup>14</sup>Our findings are also robust to alternative indices from Ertimur et al. (2018), Kini et al. (2021), and Bai et al. (2024) covering the periods 2000–2013, 2000–2014, and 2000–2018, respectively.

Following the quasi-natural experiment framework proposed by [Tang et al. \(2021\)](#), we treat changes in NCA enforceability across states as exogenous events, largely driven by legislative or judicial actions. This assumption aligns with the view that such changes are uncorrelated with unobservable firm-level determinants of misconduct.<sup>15</sup> To further validate our findings, we examine state-level changes in NCA enforceability during the sample period. States experiencing increases in *NCI* include Colorado (2012), Georgia (2005, 2011), Hawaii (2007), New Hampshire (2019), Idaho (2009), Illinois (2012), Kansas (2008), Louisiana (2004), Mississippi (2009), Ohio (2005), Texas (2011), Vermont (2006), Virginia (2006, 2014), and Wisconsin (2010, 2016). Conversely, decreases occurred in Illinois (2014, 2021), Kentucky (2015), Louisiana (2002), Massachusetts (2019), Minnesota (2024), Missouri (2019), New Hampshire (2013), Oregon (2008), South Carolina (2011), and Wyoming (2022).

To capture the directionality of these changes, we construct a symmetric treatment variable, *NCI Change*, following [Jeffers \(2024\)](#). This variable equals 1 in years following an increase in enforceability,  $-1$  after a decrease, and 0 otherwise. As shown in Panel C of Table 5, the coefficient on *NCI Change* remains negative and statistically significant across all specifications, further supporting our main results.

Recent legislative reforms have targeted the use of NCAs among low-wage workers, particularly in occupations that do not involve proprietary knowledge or costly training. While most states continue to enforce NCAs across all income levels, several have enacted statutory bans for low-wage employees. As noted by [McAdams \(2019\)](#), growing concerns over labor market competitiveness have led to increased scrutiny of NCAs, especially in industries such as fast food and retail. For instance, Colorado prohibits enforcement of NCAs entered into after August 10, 2022, for employees earning less than \$101,250 annually. To account for potential policy confounds, we exclude states with statutory bans on low-wage NCAs—namely Illinois, Maine, Maryland, Nevada, New Hampshire, Oregon, Rhode Island, Virginia, and

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<sup>15</sup>While lobbying may influence state legislation, such efforts are typically motivated by concerns over employee mobility and intellectual property protection, rather than misconduct-related outcomes.

Washington—and report the results in Panel D of Table 5. The estimated effect of *NCI* remains negative and statistically significant, consistent with our baseline findings.

Finally, Panel E of Table 5 addresses the possibility that firms strategically open or close establishments based on local NCA enforceability. We exclude establishments that both entered and exited during the sample period, as identified in the YTS records by their first and last year of operation. The results continue to show a significantly negative coefficient on *NCI*, suggesting that our findings are not driven by strategic establishment turnover.

Insert Table 5 here

### 4.3 Associated Penalties

In our analysis, we primarily focus on the annual incidence of violation records at the establishment level. However, beyond tracking violation frequency, Violation Tracker also reports the monetary penalties imposed for each case, offering a complementary lens through which to assess the severity of corporate misconduct. Following the approach of Zaman et al. (2021), Heese et al. (2022), and Chircop et al. (2025), we construct our measure of misconduct severity, *Penalties*, by taking the natural logarithm of one plus the penalty amount and multiplying the result by 100. This transformation helps address skewness in the distribution of penalty values and facilitates interpretation in regression analyses.

As shown in Table 6, we obtain consistent and statistically significant results using this alternative measure of corporate misconduct. Specifically, stronger enforceability of noncompete agreements is associated with a reduction in the severity of penalties. Using the same specification as in our baseline model, we estimate that a one-unit increase in the noncompete enforceability index (*NCI*) corresponds to a 0.024% to 0.060% decrease in the penalties associated with each violation. These results suggest that stronger NCA enforcement not only reduces the incidence of corporate wrongdoing but also alleviates the financial severity of such misconduct, as indicated by lower penalty amounts per violation.

Insert Table 6 here

## 5 Moderating Factor - Labor Turnover Costs

Having established the robustness of our baseline results, we next examine factors that may amplify or attenuate the deterrent effect of NCAs on corporate misconduct. The Stability and Discipline Channel posits that the effectiveness of NCAs hinges on the magnitude of labor turnover costs incurred by both firms and employees. When firms face high turnover costs—arising from recruitment, training, or productivity losses—the enforcement of NCAs becomes more valuable, as it helps retain trained employees and safeguard investments. Conversely, when employees face low turnover costs—such as low wages—the restrictive effect of NCAs on mobility may be less consequential, diminishing their disciplinary impact.

To empirically investigate these dynamics, we focus on three key dimensions that proxy for labor turnover costs on both sides of the employment relationship: wages, training intensity, and labor-technology substitutability. Lower wages typically indicate lower turnover costs for employees, while lower training requirements or greater substitutability between labor and technology reduce turnover costs for employers. Variation across these dimensions thus provides a meaningful context for assessing how NCAs influence the incentives for corporate misconduct.

### 5.1 Wages

We first hypothesize that the deterrent effect of NCAs depends on the wage structure within industries. According to the Stability and Discipline Channel, higher wages increase the cost of job loss for employees, thereby strengthening the disciplinary effect of NCAs. Conversely, lower wages reduce the opportunity cost of dismissal, weakening the deterrent power of NCAs. In low-wage environments, employees may perceive fewer consequences from job loss, diminishing the effectiveness of NCAs in curbing misconduct.

To empirically examine this hypothesis, we adopt an industry-level indicator from [Clemens et al. \(2018\)](#) and [Bates et al. \(2025\)](#), *Low Wage*, which measures the share of employees in an industry earning below the 10<sup>th</sup> percentile of the national wage distribution in a given year. This measure is constructed using data from the Occupational Employment and Wage Statistics (OEWS), published by the U.S. Bureau of Labor Statistics.<sup>16</sup>

Table 7 reports the results from this analysis. The positive and significant interaction between *NCI* and *Low Wage* supports our hypothesis: the deterrent effect of NCAs is indeed weaker in low-wage environments.

Insert Table 7 here

## 5.2 Training Requirements

To capture the role of training requirements perceived by firms, we employ two complementary proxies: (i) occupation-level training and preparation requirements from [Belo et al. \(2014\)](#) and (ii) a textual analysis of state statutes identifying whether employee training is recognized as a protectable business interest.

In Panel A of Table 8, building on [Belo et al. \(2017\)](#), we construct our first proxy, *Low Training Requirements*, as the percentage of workers in a given industry employed in occupations requiring a low level of training and preparation. Following [Belo et al. \(2017\)](#), occupations are classified as high- or low-skill using the Specific Vocational Preparation (SVP) scale of the Dictionary of Occupational Titles (DOT), which ranges from 1 (short demonstration) to 9 (over 10 years), quantifying the time required for a typical worker to attain the necessary skills and knowledge for average performance in a given job. Counts of high- and low-skill workers by industry are obtained from the BLS Occupational Employment and Wage Statistics (OEWS) program, with industries classified by three-digit SIC codes

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<sup>16</sup>OEWS provides detailed wage and employment data by occupation across industries and geographic regions.

before 2001 and four-digit NAICS codes thereafter.<sup>17</sup> Given that the data are available only up to 2018, Panel A covers the sample period from 2000 to 2018.

In this panel, the coefficient on *Low Training Requirements* is negative and statistically significant, indicating that misconduct is less prevalent when training is less required. The coefficient on *NCI* remains consistently negative, reaffirming our baseline results. However, the positive and significant interaction between *NCI* and the low-training proxy suggests that the deterrent effect of NCAs is weaker when training is less required. When training costs are minimal, turnover imposes little burden on firms because new hires can quickly reach full productivity, reducing the need for NCAs to retain workers and diminishing their effectiveness as a misconduct deterrent.

In Panel B, we use state statutes to proxy for the importance of training requirements in firm activities by textually identifying whether a statute recognizes employee training as a protectable or legitimate business interest. The logic is that legislatures are more likely to grant legal protection to training in jurisdictions where firms perceive substantial and costly training needs, thereby making the protection of such investments more salient. For example, Alabama specifies that “specialized and unique training involving substantial business expenditure specifically directed to a particular agent, servant, or employee (if identified in writing as consideration for the restriction)” qualifies as a legitimate business interest.<sup>18</sup> Based on this criterion, we construct the variable *Training Protection*, which equals one if the state recognizes firm-sponsored training as a protectable interest for enforcing NCAs, and zero otherwise.

As shown in Panel B, the coefficient on the interaction between *NCI* and *Training Protection* is negative and statistically significant, indicating that the deterrent effect of NCAs is

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<sup>17</sup>High-skill industries include software publishers (NAICS 5112), computer systems design (NAICS 5415), computer equipment manufacturing (NAICS 3341), and scientific R&D (NAICS 5417), while low-skill industries include clothing stores (NAICS 4481), restaurants (NAICS 7225), and gasoline stations (NAICS 4471).

<sup>18</sup>See Beck Reed Riden 50-State Noncompete Chart (<https://beckreedriden.com/50-state-noncompete-chart-2/>).



stronger in states where statutes recognize firm-sponsored training as a protectable interest. This finding supports our argument that when training investments are legally protected, firms have stronger incentives to invest in employee development and retention. In these environments, NCAs function as a more credible safeguard for such investments, thereby strengthening their deterrent effect on misconduct.

Insert Table 8 here

### 5.3 Labor-Technology Substitution

Finally, we consider the possibility of labor substitution as a proxy for the turnover costs faced by firms. When labor is more vulnerable to automation and can be easily replaced, labor mobility poses less of a concern for a firm’s operational risks. To test this idea, we use two industry-level measures of technology-substitutable labor: (1) the share of routine-task labor (Zhang, 2019) and (2) the fraction of the existing workforce that can be replaced by automated capital (Bates et al., 2025).<sup>19</sup>

In Panel A, the variable *Routine Labor* follows Zhang (2019) and measures the industry-level share of routine-task labor using Occupational Employment and Wage Statistics (OEWS). Industries are classified by three-digit SIC codes for 2001 and earlier, and four-digit NAICS codes thereafter, and are mapped to the establishment-year panel using historical industry codes. Zhang (2019) employs a time-varying definition that allows occupations to shift from non-routine to routine over time (e.g., Radio and Television Announcers, Book-keeping, Accounting, and Auditing Clerks, and Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders).

Panel A of Table 9 shows that the coefficient on *Routine Labor* is negative and statistically significant, indicating that establishments in industries with a higher share of routine-task labor are less prone to corporate misconduct. The coefficient on *NCI* remains negative and

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<sup>19</sup>Given that the data are available only up to 2018, Table 9 covers the sample period from 2000 to 2018.

significant, consistent with our baseline finding that stronger NCA enforceability reduces misconduct. However, the interaction between *NCI* and *Routine Labor* is positive and significant, suggesting that the deterrent effect of NCAs is weaker in routine-task industries. This is consistent with the idea that such industries can more easily substitute labor with technological solutions, thereby reducing their dependence on mobility restrictions to mitigate misconduct.

Panel B of Table 9 uses the variable *Automation Threat* from Bates et al. (2025), which measures the industry-level substitutability of labor with automated capital. Industries are classified at the three-digit SIC level for 2001 and earlier, and the four-digit NAICS level thereafter, and the measure is constructed as the wage-weighted average probability of computerization across occupations within each industry-year.

As shown in the Panel, the coefficient on *Automation Threat* is negative and statistically significant, indicating that misconduct is lower in sectors where labor is more easily replaced by automated capital. However, the interaction between *NCI* and *Automation Threat* is positive and significant, suggesting that the deterrent effect of NCAs is weaker in industries more exposed to automation. This pattern is consistent with the idea that when labor is more easily substitutable by automated capital, firms face lower turnover costs and rely less on NCAs to retain employees, thereby diminishing the marginal value of NCAs as a deterrent against misconduct.

Insert Table 9 here

Overall, our evidence indicates that the deterrent effect of non-compete agreements (NCAs) on employee misconduct depends on the magnitude of turnover costs borne by employees and firms. NCAs are more effective in environments where turnover costs are high, as they help firms retain trained employees and protect firm human capital investments. Conversely, when employees face low turnover costs, the disciplinary impact of unemployment risk weakens, thereby diminishing the deterrent effect of NCAs on misconduct.

## 6 Channel Analysis

In this section, we examine the mechanisms through which stronger enforcement of NCAs reduces corporate misconduct. Under the Stability and Disciplinary hypothesis, NCAs can curb misconduct by restricting labor turnover, which encourages firms to invest in training and skill development programs (Hart and Moore, 1990). These investments are likely to enhance employee commitment, performance, compliance and ultimately reducing violations. Moreover, stronger NCA enforceability increases employees’ unemployment risk. Faced with higher unemployment risk, employees may act more cautiously to avoid dismissal, thereby lowering their incentives to engage in misconduct. To test these channels, we analyze the impact of NCA enforcement on labor turnover and unemployment risk.

### 6.1 Labor Turnover

To test the effect on labor turnover, we measure employee mobility using Job-to-Job (J2J) flow data from the Longitudinal Employer–Household Dynamics (LEHD) program of the U.S. Census. Because NCAs are enforced within state boundaries, we focus on within-state flows. The J2J data provide rich detail on labor market transitions, allowing us to track worker movements between jobs. Our main metrics is *Job-to-Job Flow*, defined as the annual growth rate in main job hires—where workers begin a new primary job in the same calendar year they exit their previous one. We construct this measure at the state–industry level, further disaggregated by worker gender and education. Industries are defined at the 2-digit NAICS level, with flows involving Financial and Insurance (NAICS 52), Utilities (NAICS 22), and Public Administration (NAICS 92) excluded.

Since NCAs primarily restrict job mobility within the same industry, we interact *NCI* with an indicator variable, *Within Industry*, which equals one if the destination industry matches the origin industry. Table 10 shows that across all specifications, the coefficient on

$NCI \times Within\ Industry$  is negative and statistically significant, indicating that NCAs indeed constrain within-industry mobility.

Insert Table 10 here

## 6.2 Unemployment Risks

Finally, we examine the role of unemployment risk as a disciplinary mechanism through which NCAs may deter employee misconduct. By restricting labor mobility, NCAs can increase employees' exposure to unemployment, thereby raising the stakes of job loss. Facing heightened unemployment risk, employees may be more motivated to maintain performance and internal compliance, reducing the likelihood of engaging in misconduct (Shapiro and Stiglitz, 1984).

To empirically test this channel, we use county-level data on unemployment counts and rates from the Local Area Unemployment Statistics (LAUS) program, published by the U.S. Bureau of Labor Statistics. Panel A of Table 11 presents the effect of the Non-Compete Enforcement Index ( $NCI$ ) on unemployment counts, while Panel B reports the effect on unemployment rates.

In both panels, the coefficient on  $NCI$  is positive and statistically significant, indicating that stronger enforcement of NCAs is associated with increased unemployment risk for employees. These results lend support to the disciplinary channel, suggesting that the threat of unemployment—amplified by limited mobility under NCAs—serves as a credible deterrent against misconduct.

Insert Table 11 here

## 7 Conclusion

This paper investigates the impact of non-compete agreement (NCA) enforceability on corporate misconduct, providing robust evidence that stricter NCA enforcement significantly reduces the incidence of misconduct. Importantly, this deterrent effect remains significant even within firm-year observations, suggesting that it is not merely driven by differences in monitoring intensity or firm-level governance. By comparing establishments within the same firm—subject to similar oversight and incentive structures but exposed to varying levels of NCA enforceability—we address key endogeneity concerns and strengthen the causal interpretation of our results.

We further show that the effectiveness of NCAs is contingent on the level of labor turnover costs. In contexts where turnover costs are low—such as industries characterized by low wages, routine-intensive tasks, or high automation risk—the disciplinary power of NCAs is significantly weakened. Conversely, in environments with high turnover costs, such as states with legal protections for employer training investments, NCAs exert a stronger influence on misconducts. Additionally, we provide channel evidence that NCAs are associated with reduced labor turnover and increased unemployment risk, reinforcing their role in shaping employee incentives and workplace discipline.

By examining labor mobility and ethical behavior, this study emphasizes the human capital dimension in corporate governance. Our findings suggest that while NCAs are often criticized for restricting worker mobility and innovation, they may also yield unintended yet beneficial effects by curbing misconduct among rank-and-file employees. Importantly, this research shifts the focus from executive-level wrongdoing to the broader workforce, highlighting the importance of general employee mobility in shaping firm behavior and ethical standards.

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Figure 1: **State-level Noncompete Agreements Index (NCI)**

This figure presents the 2024 state-level noncompete enforceability index (*NCI*) for the U.S., extended from [Bai et al. \(2024\)](#). Darker color intensity indicates higher levels of enforceability (i.e., higher *NCI* values).

0 1-3 4-6 7-9

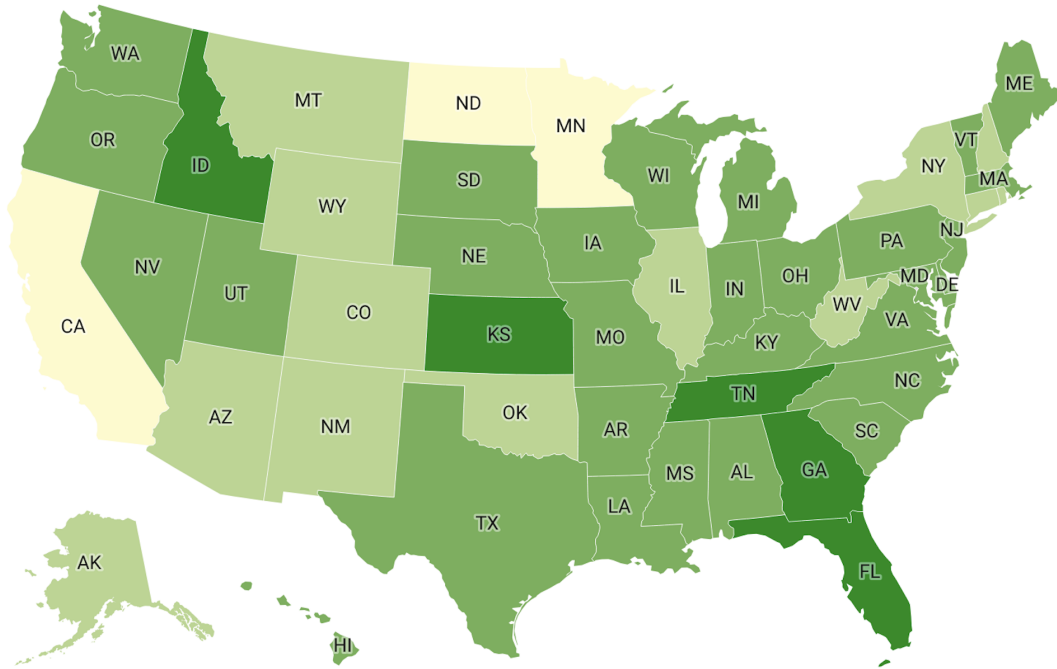


Table 1: **Violations By Year and Industry**

This table presents the statistics of violation records and corresponding penalty amounts by year (Panel A) and 1-digit SIC industry (Panel B) for the period 2000–2024. Columns (1) and (3) report the average number of violations and the average penalty amount per violating establishment (in thousands of dollars), respectively. Columns (2) and (4) display the total number of violations and the total penalty amount (in thousands of dollars).

	Raw violation		Raw penalties	
	Mean	Total	Mean	Total
	(1)	(2)	(3)	(4)
<b>Panel A: By Year</b>				
2000	1.49	828	1,963.89	1,093,888.81
2001	1.50	819	1,843.47	1,004,691.63
2002	1.40	879	1,218.77	764,166.09
2003	1.40	967	2,089.81	1,444,062.16
2004	1.36	1,032	2,527.45	1,913,278.64
2005	1.47	1,142	2,483.81	1,932,407.46
2006	1.42	1,150	1,867.23	1,510,591.47
2007	1.70	1,464	2,149.95	1,848,954.57
2008	1.65	1,519	1,916.13	1,766,676.06
2009	1.74	1,558	2,623.95	2,348,432.84
2010	1.73	1,845	2,194.21	2,339,030.63
2011	1.74	1,955	2,184.03	2,459,215.58
2012	1.70	1,826	2,144.33	2,309,441.61
2013	1.63	1,733	2,439.60	2,595,737.33
2014	1.57	1,683	2,795.51	2,993,987.07
2015	1.52	1,755	2,886.13	3,342,133.25
2016	1.49	1,817	2,581.64	3,139,269.11
2017	1.39	1,733	2,624.69	3,267,744.32
2018	1.36	1,688	2,136.79	2,643,213.37
2019	1.40	1,850	2,263.96	2,988,428.48
2020	1.44	1,442	3,343.93	3,357,303.27
2021	1.46	1,592	2,713.94	2,950,053.22
2022	1.49	2,055	3,558.18	4,910,284.89
2023	1.48	1,883	2,947.64	3,740,558.15
2024	1.54	1,801	4,579.95	5,372,276.02
<b>Total</b>	<b>1.52</b>	<b>38,016</b>	<b>2,568.21</b>	<b>64,035,826.01</b>
<b>Panel B: By Industry</b>				
Agriculture, Forestry and Fishing	1.41	58	3,916.54	160,578.26
Mining	2.96	4,864	1,263.33	2,074,388.97
Construction	1.29	1,048	1,008.67	817,023.17
Manufacturing	1.43	14,992	2,614.42	27,328,521.42
Transportation and Communication	2.18	5,584	2,914.53	7,481,606.15
Wholesale Trade	1.25	2,187	3,327.42	5,819,654.75
Retail Trade	1.17	5,693	1,856.75	9,044,231.17
Services	1.28	3,590	4,037.78	11,309,822.11
<b>Total</b>	<b>1.52</b>	<b>38,016</b>	<b>2,568.21</b>	<b>64,035,826.01</b>

Table 2: **Summary Statistics**

This table presents the summary statistics of key variables used in our empirical analysis for the sample period 2000–2024. Variable definitions are provided in Appendix A1. All continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

	N	Mean	SD	p25	p50	p75
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Panel A: Corporate Misconduct</b>						
Violations	9,033,695	0.229	4.726	0.000	0.000	0.000
Penalties	9,033,695	1.040	22.935	0.000	0.000	0.000
<b>Panel B: Enforceability of NCA</b>						
NCI	9,033,695	4.449	2.275	3.000	5.000	6.000
<b>Panel C: Firm Characteristics</b>						
Firm Size	9,033,695	9.051	1.723	7.834	8.954	10.239
ROA	9,033,695	0.173	0.090	0.114	0.159	0.216
Sale Growth	9,033,695	0.076	0.163	0.004	0.060	0.122
Leverage	9,033,695	0.355	0.298	0.173	0.311	0.452
PPE	9,033,695	0.368	0.211	0.185	0.358	0.531
<b>Panel D: County-level Macroeconomic Conditions</b>						
County Labor Force	9,033,695	12.116	1.563	11.040	12.281	13.179
County PC Income	9,033,695	10.677	0.333	10.447	10.662	10.890
<b>Panel E: Industry characteristics</b>						
Low Training Requirements	4,006,995	0.841	0.163	0.758	0.911	0.959
Low Wage	4,007,010	0.114	0.213	0.000	0.006	0.092
Routine Labor	3,944,231	0.173	0.171	0.058	0.102	0.197
Automation Threat	4,007,010	0.594	0.154	0.506	0.626	0.688

Table 3: **Enforceability of NCA and Corporate Misconduct**

This table reports regression estimates examining the relationship between state-level noncompete enforceability index (NCI) and corporate misconduct over the period 2000–2024. The dependent variable is the incidence of violations, measured as the natural logarithm of one plus the number of violation records, multiplied by 100. NCI is the enforceability index of noncompete agreements. Additional variables are defined as in Appendix A1. Robust standard errors are clustered at the state-year level. *t*-statistics are provided in parentheses. The superscript \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	Violations				
	Cross-Firm		Within-Firm		Firm-Year
	(1)	(2)	(3)	(4)	(5)
NCI	-0.010*** (-8.92)	-0.010*** (-8.28)	-0.004*** (-4.08)	-0.004*** (-4.65)	-0.009*** (-10.20)
Firm Size		-0.012*** (-8.34)	0.023*** (3.52)	0.023** (2.57)	
ROA		-1.029*** (-28.44)	0.158*** (3.76)	0.152** (2.36)	
Sale Growth		0.161*** (5.97)	0.036* (1.88)	0.038 (1.62)	
Leverage		-0.042*** (-4.70)	-0.042*** (-3.21)	0.000 (0.01)	
PPE		0.191*** (11.87)	0.171*** (5.35)	0.138** (2.35)	
County Labor Force			0.022*** (10.85)	0.023*** (11.36)	
County PC Income			0.134*** (13.92)	0.126*** (13.37)	
FE			Firm, Year	Firm, Ind-Year	Firm-Year
N	9,033,695	9,033,695	9,033,695	9,033,695	9,033,695
Adjusted R <sup>2</sup>	0.000	0.000	0.035	0.041	0.059

Table 4: **NCI Effects across Violation Types**

This table reports estimates from regressions of the effect of *NCI* on *Environmental-related Violation* (Panel A) and *Workplace Safety Violation* (Panel B) for the period 2000–2024. The dependent variable is the incidence of violations, measured as the natural logarithm of one plus the number of violation records, multiplied by 100. NCI is the enforceability index of noncompete agreements. Additional variables are defined as in Appendix A1. Robust standard errors are clustered at the state-year level. *t*-statistics are provided in parentheses. The superscript \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

**Panel A: Environmental-related Violations**

	Violations				
	Cross-Firm		Within-Firm		Firm-Year
	(1)	(2)	(3)	(4)	(5)
NCI	-0.004*** (-8.16)	-0.004*** (-8.05)	-0.002*** (-5.10)	-0.002*** (-5.11)	-0.003*** (-7.19)
Firm Size		-0.002*** (-4.79)	0.002 (0.87)	0.004 (1.07)	
ROA		-0.255*** (-18.52)	0.006 (0.34)	0.019 (0.69)	
Sale Growth		0.034*** (2.62)	-0.005 (-0.54)	-0.001 (-0.06)	
Leverage		-0.022*** (-8.07)	-0.003 (-0.58)	0.004 (0.49)	
PPE		0.094*** (12.40)	0.053*** (4.45)	0.046* (1.83)	
County Labor Force			0.008*** (8.58)	0.008*** (8.72)	
County PC Income			0.011*** (2.64)	0.009** (2.29)	
FE			Firm, Year	Firm, Ind-Year	Firm-Year
N	9,014,755	9,014,755	9,014,755	9,014,755	9,014,755
Adjusted R <sup>2</sup>	0.000	0.000	0.019	0.022	0.042



Table 4: NCI Effects across Misconduct Types (Cont.)

## Panel B: Workplace Safety Violations

	Violations				
	Cross-Firm		Within-Firm		Firm-Year
	(1)	(2)	(3)	(4)	(5)
NCI	-0.004*** (-4.97)	-0.004*** (-4.83)	-0.005*** (-6.99)	-0.005*** (-7.90)	-0.005*** (-7.98)
Firm Size		-0.009*** (-11.26)	0.010*** (2.69)	0.004 (0.86)	
ROA		-0.414*** (-20.54)	0.123*** (4.57)	0.100** (2.37)	
Sale Growth		0.079*** (5.85)	0.046*** (4.21)	0.038** (2.41)	
Leverage		-0.014*** (-3.07)	-0.057*** (-6.32)	-0.020 (-1.57)	
PPE		0.056*** (7.16)	0.071*** (3.01)	0.077** (2.01)	
County Labor Force			-0.001 (-1.33)	-0.001 (-0.79)	
County PC Income			0.015*** (2.76)	0.010* (1.92)	
FE			Firm, Year	Firm, Ind-Year	Firm-Year
N	9,020,055	9,020,055	9,020,055	9,020,055	9,020,055
Adjusted R <sup>2</sup>	0.000	0.000	0.039	0.049	0.071

Table 5: **Robustness Tests**

This table presents estimates from robustness tests. Panel A expands the sample to include non-violator firms. Panel B and C report results using alternative measures of noncompete enforceability index: the *NCI* [Bishara \(2011\)](#) index and changes in *NCI*, respectively. Panel D excludes states where non-compete agreements are unenforceable for low-paid workers, including Illinois, Maine, Maryland, Nevada, New Hampshire, Oregon, Rhode Island, Virginia, and Washington. Panel E excludes establishments that may have endogenously chosen their location based on the prevailing NCA enforcement regime, specifically by removing those that entered or exited during the sample period. The dependent variable is the incidence of violations, measured as the natural logarithm of one plus the number of violation records, multiplied by 100. *NCI* is the enforceability index of noncompete agreements. Additional variables are defined as in Appendix A1. Robust standard errors are clustered at the state-year level. *t*-statistics are provided in parentheses. The superscript \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

**Panel A: Non-violators**

	Violations				
	Cross-Firm		Within-Firm		Firm-Year
	(1)	(2)	(3)	(4)	(5)
NCI	-0.008*** (-8.43)	-0.008*** (-8.35)	-0.004*** (-4.36)	-0.004*** (-4.93)	-0.007*** (-9.92)
Firm Size		0.013*** (13.87)	0.025*** (5.58)	0.015** (2.54)	
ROA		-0.135*** (-9.55)	0.125*** (5.68)	0.083** (2.10)	
Sale Growth		0.122*** (5.79)	0.022 (1.45)	0.029* (1.69)	
Leverage		-0.071*** (-11.86)	-0.033*** (-3.60)	-0.002 (-0.16)	
PPE		0.032*** (3.08)	0.083*** (4.94)	0.129*** (3.09)	
County Labor Force			0.017*** (10.96)	0.018*** (11.42)	
County PC Income			0.103*** (14.12)	0.098*** (13.56)	
FE			Firm, Year	Firm, Ind-Year	Firm-Year
N	11,668,265	11,668,265	11,668,265	11,668,265	11,668,265
Adjusted R <sup>2</sup>	0.000	0.000	0.035	0.041	0.057

Table 5: **Robustness Tests (Cont.)**Panel B: NCI **Bishara (2011)**

	Violations				
	Cross-Firm		Within-Firm		Firm-Year
	(1)	(2)	(3)	(4)	(5)
NCI <b>Bishara (2011)</b>	-0.074*** (-5.61)	-0.075*** (-5.39)	-0.042*** (-3.20)	-0.041*** (-3.62)	-0.092*** (-8.66)
Firm Size		0.001 (0.56)	0.052*** (4.27)	0.027* (1.81)	
ROA		-1.303*** (-28.36)	0.237*** (3.76)	0.234** (2.16)	
Sale Growth		0.146*** (3.72)	0.045 (1.62)	0.075** (2.27)	
Leverage		0.078*** (10.15)	-0.089*** (-3.97)	-0.059* (-1.90)	
PPE		0.266*** (11.75)	0.453*** (5.96)	0.238** (2.31)	
County Labor Force			0.029*** (10.24)	0.029*** (10.82)	
County PC Income			0.129*** (9.77)	0.120*** (9.32)	
FE			Firm, Year	Firm, Ind-Year	Firm-Year
N	4,758,683	4,758,683	4,758,683	4,758,683	4,758,683
Adjusted R <sup>2</sup>	0.000	0.001	0.034	0.043	0.059

Table 5: **Robustness Tests (Cont.)****Panel C: NCI Change**

	Violations				
	Cross-Firm		Within-Firm		Firm-Year
	(1)	(2)	(3)	(4)	(5)
NCI Change	-0.020*** (-3.35)	-0.018*** (-2.92)	-0.011*** (-3.16)	-0.010*** (-3.03)	-0.011*** (-3.26)
Firm Size		-0.011*** (-8.02)	0.023*** (3.54)	0.023*** (2.58)	
ROA		-1.029*** (-28.71)	0.157*** (3.76)	0.152** (2.36)	
Sale Growth		0.160*** (5.95)	0.036* (1.88)	0.038 (1.62)	
Leverage		-0.041*** (-4.80)	-0.042*** (-3.21)	0.000 (0.02)	
PPE		0.191*** (11.86)	0.171*** (5.34)	0.137** (2.34)	
County Labor Force			0.023*** (11.61)	0.024*** (12.15)	
County PC Income			0.134*** (13.98)	0.127*** (13.44)	
FE			Firm, Year	Firm, Ind-Year	Firm-Year
N	9,033,695	9,033,695	9,033,695	9,033,695	9,033,695
Adjusted R <sup>2</sup>	0.000	0.000	0.035	0.041	0.059

Table 5: **Robustness Tests (Cont.)****Panel D: Low-Wage Ban Exclusion**

	Violations				
	Cross-Firm		Within-Firm		Firm-Year
	(1)	(2)	(3)	(4)	(5)
NCI	-0.010*** (-9.11)	-0.010*** (-8.38)	-0.004*** (-4.16)	-0.004*** (-4.78)	-0.009*** (-10.27)
Firm Size		-0.012*** (-8.75)	0.021*** (3.19)	0.025*** (2.72)	
ROA		-1.043*** (-27.74)	0.154*** (3.60)	0.157** (2.41)	
Sale Growth		0.161*** (5.78)	0.041** (2.08)	0.036 (1.50)	
Leverage		-0.038*** (-4.11)	-0.036*** (-2.75)	0.001 (0.08)	
PPE		0.206*** (12.58)	0.184*** (5.60)	0.135** (2.25)	
County Labor Force			0.023*** (11.04)	0.024*** (11.59)	
County PC Income			0.130*** (13.43)	0.123*** (12.89)	
FE			Firm, Year	Firm, Ind-Year	Firm-Year
N	8,678,489	8,678,489	8,678,489	8,678,489	8,678,489
Adjusted R <sup>2</sup>	0.000	0.000	0.035	0.042	0.060

Table 5: **Robustness Tests (Cont.)****Panel E: Controlling for Strategic Location Choices**

	Violations				
	Cross-Firm		Within-Firm		Firm-Year
	(1)	(2)	(3)	(4)	(5)
NCI	-0.010*** (-7.40)	-0.010*** (-6.67)	-0.003*** (-2.79)	-0.003*** (-3.08)	-0.009*** (-9.78)
Firm Size		-0.018*** (-10.22)	0.032*** (4.25)	0.023** (2.22)	
ROA		-1.226*** (-25.61)	0.115** (2.22)	0.133* (1.72)	
Sale Growth		0.153*** (4.87)	0.038* (1.66)	0.025 (0.89)	
Leverage		-0.058*** (-5.17)	0.002 (0.10)	0.018 (0.86)	
PPE		0.187*** (10.20)	0.279*** (7.51)	0.173*** (2.58)	
County Labor Force			0.028*** (11.65)	0.030*** (12.10)	
County PC Income			0.176*** (14.94)	0.169*** (14.37)	
FE			Firm, Year	Firm, Ind-Year	Firm-Year
N	7,215,732	7,215,732	7,215,732	7,215,732	7,215,732
Adjusted R <sup>2</sup>	0.000	0.001	0.039	0.048	0.068

Table 6: **The Effect of NCI on Misconduct Penalties**

This table reports regression estimates examining the relationship between state-level noncompete enforceability index (NCI) and misconduct penalties over the period 2000–2024. The dependent variable is misconduct penalties, measured as the natural logarithm of one plus the amount of associated penalties (in thousands of dollars), multiplied by 100. NCI is the enforceability index of noncompete agreements. Additional variables are defined as in Appendix A1. Robust standard errors are clustered at the state-year level. *t*-statistics are provided in parentheses. The superscript \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	Penalties				
	Cross-Firm		Within-Firm		Firm-Year
	(1)	(2)	(3)	(4)	(5)
NCI	-0.060*** (-12.12)	-0.060*** (-11.18)	-0.024*** (-4.67)	-0.024*** (-5.11)	-0.050*** (-11.34)
Firm Size		-0.003 (-0.40)	0.107*** (3.53)	0.134*** (2.82)	
ROA		-4.222*** (-28.62)	0.428** (2.28)	0.560* (1.89)	
Sale Growth		0.589*** (5.53)	0.079 (0.97)	0.027 (0.25)	
Leverage		-0.187*** (-4.85)	-0.230*** (-3.93)	0.018 (0.20)	
PPE		0.268*** (3.77)	0.503*** (3.65)	0.383 (1.54)	
County Labor Force			0.110*** (12.28)	0.112*** (12.75)	
County PC Income			0.924*** (17.49)	0.897*** (17.13)	
FE			Firm, Year	Firm, Ind-Year	Firm-Year
N	9,033,695	9,033,695	9,033,695	9,033,695	9,033,695
Adjusted R <sup>2</sup>	0.000	0.000	0.020	0.024	0.040

Table 7: **The Effect of Wages**

This table reports estimates from the regression of the interaction between NCI and wages on corporate misconduct for the period 2000–2024. The dependent variable is the incidence of violations, measured as the natural logarithm of one plus the number of violation records, multiplied by 100. NCI is the enforceability index of noncompete agreements. This table considers *Low wage* is measured as the share of workers earning below the 10<sup>th</sup> percentile of the national wage distribution. Additional variables are defined as in Appendix A1. Robust standard errors are clustered at the state-year level. *t*-statistics are provided in parentheses. The superscript \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	Violations			
	(1)	(2)	(3)	(4)
NCI×Low Wage	0.023*** (3.13)	0.019** (2.25)	0.019*** (3.86)	0.018*** (4.16)
NCI	-0.018*** (-6.39)	-0.018*** (-6.15)	-0.007*** (-3.13)	-0.006*** (-3.29)
Low Wage	-0.740*** (-19.88)	-0.734*** (-16.49)	-0.741*** (-14.34)	-0.882*** (-11.64)
Firm Size		-0.011*** (-4.37)	0.100*** (6.87)	0.061*** (3.01)
ROA		-1.265*** (-24.30)	0.245** (2.38)	0.403* (1.85)
Sale Growth		0.252*** (4.54)	-0.020 (-0.44)	0.101* (1.79)
Leverage		0.021 (1.56)	-0.175*** (-4.28)	-0.101 (-1.43)
PPE		0.596*** (17.91)	0.435*** (5.10)	0.166 (1.05)
County Labor Force			0.041*** (11.04)	0.043*** (11.52)
County PC Income			0.140*** (8.68)	0.129*** (8.09)
FE			Firm, Year	Firm, Ind-Year
N	4,007,010	4,007,010	4,007,010	4,007,010
Adjusted R <sup>2</sup>	0.001	0.001	0.038	0.047



Table 8: **The Effect of Training Requirements**

This table reports estimates from the regression of the interaction between NCI and training requirements on corporate misconduct. The dependent variable is the incidence of violations, measured as the natural logarithm of one plus the number of violation records, multiplied by 100. NCI is the enforceability index of noncompete agreements. Panel A focuses on *Low Training Requirements*, defined as the percentage of workers in an industry requiring minimal training and preparation. Panel B considers NCA with training protection clause. *Training Protection* is an indicator equal to one if the state recognizes protecting firm-sponsored training as a legitimate or protectable interest for enforcing NCAs and zero otherwise. Additional variables are defined as in Appendix A1. Robust standard errors are clustered at the state-year level. *t*-statistics are provided in parentheses. The superscript \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

**Panel A: Training requirements**

	Violations			
	(1)	(2)	(3)	(4)
NCI×Low Training Requirements	0.033*** (3.15)	0.025*** (2.62)	0.024*** (3.24)	0.021*** (2.91)
NCI	-0.042*** (-4.63)	-0.035*** (-4.17)	-0.025*** (-3.73)	-0.022*** (-3.45)
Low Training Requirements	-0.630*** (-10.90)	-0.764*** (-15.17)	-0.222*** (-3.33)	-0.133* (-1.87)
Firm Size		-0.018*** (-6.88)	0.092*** (6.35)	0.053** (2.57)
ROA		-1.589*** (-28.46)	0.286*** (2.78)	0.370* (1.70)
Sale Growth		0.266*** (4.59)	-0.018 (-0.41)	0.099* (1.76)
Leverage		-0.028** (-2.04)	-0.133*** (-3.25)	-0.098 (-1.38)
PPE		0.615*** (17.70)	0.451*** (5.29)	0.197 (1.24)
County Labor Force			0.041*** (10.94)	0.043*** (11.41)
County PC Income			0.140*** (8.66)	0.129*** (8.10)
FE			Firm, Year	Firm, Ind-Year
N	4,006,995	4,006,995	4,006,995	4,006,995
Adjusted R <sup>2</sup>	0.000	0.001	0.038	0.047

Table 8: The Effect of Training Requirements (Cont.)

Panel B: NCA with training protection

	Violations			
	(1)	(2)	(3)	(4)
NCI×Training Protection	-0.022*** (-8.50)	-0.022*** (-7.44)	-0.009*** (-4.20)	-0.009*** (-4.56)
NCI	-0.004** (-2.34)	-0.004* (-1.90)	-0.002 (-1.42)	-0.002 (-1.52)
Training Protection	0.138*** (10.31)	0.132*** (8.80)	0.061*** (6.09)	0.061*** (6.60)
Firm Size		-0.011*** (-7.85)	0.023*** (3.56)	0.023*** (2.59)
ROA		-1.028*** (-28.75)	0.158*** (3.78)	0.153** (2.38)
Sale Growth		0.159*** (6.10)	0.036* (1.87)	0.038 (1.61)
Leverage		-0.040*** (-4.58)	-0.042*** (-3.21)	0.000 (0.02)
PPE		0.187*** (11.69)	0.171*** (5.34)	0.138** (2.35)
County Labor Force			0.024*** (12.30)	0.025*** (12.72)
County PC Income			0.133*** (14.00)	0.126*** (13.46)
FE			Firm, Year	Firm, Ind-Year
N	9,033,695	9,033,695	9,033,695	9,033,695
Adjusted R <sup>2</sup>	0.000	0.000	0.035	0.041

Table 9: **The Effect of Labor-Technology Substitution**

This table reports estimates from the regression of the interaction between NCI and labor-technology substitution on corporate misconduct. The dependent variable is the incidence of violations, measured as the natural logarithm of one plus the number of violation records, multiplied by 100. NCI is the enforceability index of noncompete agreements. Panel A focuses on *Routine labor*, defined as the share of routine-task labor in an industry, while Panel B considers *Automation threat*, measured as the proportion of employees in an industry who are susceptible to replacement by automation. Additional variables are defined as in Appendix A1. Robust standard errors are clustered at the state-year level. *t*-statistics are provided in parentheses. The superscript \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

**Panel A: Routine labor**

	Violations			
	(1)	(2)	(3)	(4)
NCI×Routine Labor	0.033*** (3.63)	0.021*** (3.00)	0.026*** (3.97)	0.021*** (3.34)
NCI	-0.020*** (-8.23)	-0.019*** (-7.25)	-0.008*** (-3.86)	-0.007*** (-3.84)
Routine Labor	-0.429*** (-8.48)	-0.363*** (-9.28)	-0.912*** (-7.02)	-0.647*** (-4.94)
Firm Size		-0.005* (-1.74)	0.073*** (5.01)	0.043** (2.01)
ROA		-1.560*** (-27.87)	0.311*** (3.04)	0.434** (2.00)
Sale Growth		0.274*** (4.68)	-0.021 (-0.47)	0.103* (1.84)
Leverage		-0.039*** (-2.79)	-0.143*** (-3.49)	-0.134* (-1.88)
PPE		0.507*** (15.05)	0.459*** (5.09)	0.108 (0.67)
County Labor Force			0.042*** (11.22)	0.044*** (11.73)
County PC Income			0.135*** (8.28)	0.124*** (7.75)
FE			Firm, Year	Firm, Ind-Year
N	3,944,231	3,944,231	3,944,231	3,944,231
Adjusted R <sup>2</sup>	0.000	0.001	0.038	0.047

Table 9: The Effect of Labor-Technology Substitution (Cont.)

## Panel B: Automation threat

	Violations			
	(1)	(2)	(3)	(4)
NCI×Automation Threat	0.075*** (7.74)	0.068*** (8.34)	0.059*** (9.45)	0.054*** (8.64)
NCI	-0.058*** (-9.19)	-0.055*** (-9.54)	-0.039*** (-9.02)	-0.036*** (-8.55)
Automation Threat	-0.789*** (-14.42)	-0.666*** (-13.65)	-0.601*** (-7.50)	-0.482*** (-5.57)
Firm Size		-0.008*** (-3.25)	0.089*** (6.17)	0.053*** (2.60)
ROA		-1.502*** (-26.82)	0.294*** (2.88)	0.377* (1.73)
Sale Growth		0.250*** (4.32)	-0.022 (-0.48)	0.099* (1.76)
Leverage		-0.045*** (-3.23)	-0.133*** (-3.27)	-0.099 (-1.40)
PPE		0.496*** (15.32)	0.447*** (5.25)	0.196 (1.24)
County Labor Force			0.041*** (10.98)	0.043*** (11.47)
County PC Income			0.139*** (8.56)	0.128*** (8.01)
FE			Firm, Year	Firm, Ind-Year
N	4,007,010	4,007,010	4,007,010	4,007,010
Adjusted R <sup>2</sup>	0.000	0.001	0.038	0.047

Table 10: **Within State Job to Job Flow**

This table reports regression estimates examining the impact of the state-level non-compete enforceability index (NCI) on within state job to job flows for the period 2000–2024. The dependent variable is the annual growth in job-to-job flows, defined as the number of main job hires—where workers begin a new primary job in the same calendar year they exit their previous one—within the destination industry and state. NCI is the enforceability index of noncompete agreements. *Within Industry* equals one if the destination industry is the same as the origin industry. Additional variables are defined as in Appendix A1. Robust standard errors are clustered at the state-year level. *t*-statistics are provided in parentheses. The superscript \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	Job-to-Job Flow		
	(1)	(2)	(3)
NCI $\times$ Within Industry	-0.003* (-1.90)	-0.003* (-1.80)	-0.003* (-1.77)
NCI	-0.002* (-1.68)	-0.002 (-1.55)	-0.006 (-1.23)
Within Industry	-0.034*** (-4.44)	-0.036*** (-4.71)	-0.036*** (-4.72)
State Labor Force		-0.022*** (-10.11)	-0.175*** (-3.22)
State PC Income		-0.088*** (-5.16)	-0.325*** (-5.36)
FE		Year, Gender, Education	State, Year, Gender, Education
N	2,126,268	2,126,268	2,126,268
Adjusted R <sup>2</sup>	0.031	0.032	0.032

**Table 11: NCA and Unemployment Risks**

This table reports estimates of the relationship between state-level noncompete enforceability index (NCI) and unemployment risk for the period 2000–2024. The dependent variable is the natural logarithm of the county-level number of unemployed individuals in Panel A and the unemployment rate in Panel B. NCI is the enforceability index of noncompete agreements. Additional variables are defined as in Appendix A1. Robust standard errors are clustered at the state-year level. *t*-statistics are provided in parentheses. The superscript \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

<b>Panel A: Unemployment count</b>			
	Unemployment count		
	(1)	(2)	(3)
NCI	0.016*** (12.35)	0.013*** (7.34)	0.005*** (6.38)
County Labor Force	0.710*** (86.82)	1.003*** (1254.45)	1.043*** (1109.92)
County PC Income	-0.349*** (-37.64)	-0.628*** (-105.09)	-0.514*** (-127.15)
FE		County, Year	State, Year
N	76,953	76,953	76,953
Adjusted R <sup>2</sup>	0.989	0.978	0.940

<b>Panel B: Unemployment rate</b>			
	Unemployment rate		
	(1)	(2)	(3)
NCI	0.113*** (13.38)	0.107*** (9.79)	0.017*** (3.33)
County Labor Force	-0.737*** (-14.37)	-0.033*** (-6.31)	0.174*** (28.88)
County PC Income	-2.052*** (-33.01)	-3.633*** (-90.37)	-2.695*** (-110.94)
FE		County, Year	State, Year
N	76,953	76,953	76,953
Adjusted R <sup>2</sup>	0.817	0.652	0.120

## Appendix A1 - Variable definitions

Variable	Description [ <i>Data source</i> ]
<b>Corporate Misconduct</b>	
Raw violations	The number of violations [ <i>Violation Tracker</i> ].
Violations	The natural logarithm of one plus the number of violations, multiplied by 100. [ <i>Violation Tracker</i> ].
Raw penalties	The dollar amount of penalties (in \$'000) associated with violations [ <i>Violation Tracker</i> ].
Penalties	The natural logarithm of one plus the dollar amount of penalties (in \$'000) associated with violations, multiplied by 100 [ <i>Violation Tracker</i> ].
<b>Enforceability of NCA</b>	
NCI	The state-level noncompete agreement enforceability index [ <i>Index initially developed by Garmaise (2011), extended through 2013 by Ertimur et al. (2018), updated through 2018 by Bai et al. (2024), and further extended to 2019–2024 in this study using the Beck Reed Riden 50-State Noncompete Chart from <a href="https://beckreedriden.com/50-state-noncompete-chart-2/">https://beckreedriden.com/50-state-noncompete-chart-2/</a></i> ].
NCI change	A indicator variable equals (1) one in the year following an increase in NCA enforceability, or (2) minus one in the year following a decrease, or zero otherwise [ <i>Same as above</i> ].
NCI Bishara (2011)	The state-level noncompete agreement enforceability index [ <i>Index initially developed by Bishara (2011) and extended by Johnson et al. (2025)</i> ].
<b>Firm characteristics</b>	
Firm Size	The natural logarithm of total assets, $\ln(AT)$ [ <i>Compustat</i> ].
ROA	Earnings before interest, taxes, depreciation, and amortization divided by total assets, $EBITDA/AT$ [ <i>Compustat</i> ].
Sale Growth	The annual growth in sales, $(SALE_t/SALE_{t-1})-1$ [ <i>Compustat</i> ].
Leverage	Total debt, defined as debt in current liabilities plus long-term debt, divided by total assets, $(DLC+DLTT)/AT$ [ <i>Compustat</i> ].
PPE	Net property, plant, and equipment divided by total assets, $PPENT/AT$ [ <i>Compustat</i> ].
<b>County-level variables</b>	
County Labor Force	The natural logarithm of the labor force in the county where the establishment is located [ <i>U.S. Bureau of Labor Statistics</i> ].
County Income per Capita	The natural logarithm of county-level personal income per capita (i.e., personal income divided by population) where the establishment is located [ <i>U.S. Bureau of Economic Analysis</i> ].
Unemployment count	The natural logarithm of the number of unemployed individuals in the county [ <i>U.S. Bureau of Labor Statistics</i> ].
Unemployment rate	The unemployment rate per county [ <i>U.S. Bureau of Labor Statistics</i> ].

## Appendix A - Variable definitions (Cont.)

Variable	Description [ <i>Data source</i> ]
<b>State-level variables</b>	
State Labor Force	The natural logarithm of the total labor force in each state [ <i>U.S. Bureau of Labor Statistics</i> ].
State PC Income	The natural logarithm of state-level personal income per capita (i.e., personal income divided by population) [ <i>U.S. Bureau of Economic Analysis</i> ].
Training Protection	An indicator equal to one if the state recognizes protecting firm-sponsored training as a legitimate or protectable interest for enforcing NCAs, and zero otherwise [ <i>Beck Reed Riden</i> ].
<b>Industry-level variables</b>	
Low Training Requirements	The proportion of low skill workers in a given industry and year, where low-skilled workers are classified as those employed in occupations requiring minimal training and preparation ( <a href="#">Belo et al. (2017)</a> ) [ <i>BLS Occupational Employment and Wage Statistics (OEWS)</i> ].
Low wage	The proportion of employed workers in an industry and year earning wages below the 10 <sup>th</sup> percentile of the overall wage distribution for that year, calculated using OEWS data ( <a href="#">Bates et al. (2025)</a> ) [ <i>BLS Occupational Employment and Wage Statistics (OEWS)</i> ].
Routine labor	The proportion of routine-task labor at the industry level, following <a href="#">Zhang (2019)</a> , is constructed using OES data [ <i>BLS Occupational Employment and Wage Statistics (OEWS)</i> ].
Automation threat	The share of the workforce that can be replaced by automation, developed by <a href="#">Bates et al. (2025)</a> . This measure is constructed as a wage-weighted average of computerization probabilities, following <a href="#">Frey and Osborne (2017)</a> , across all occupations within an industry and year, using OEWS employment and wage data [ <i>BLS Occupational Employment and Wage Statistics (OEWS)</i> ].
Job-to-Job Flow	The annual growth in job-to-job flows, defined as the number of main job hires—where workers begin a new primary job in the same calendar year they exit their previous one—within the destination industry and state [ <i>Longitudinal Employer-Household Dynamics (LEHD)</i> ].
Within Industry	An indicator equals one if the destination industry matches the origin industry in the job-to-job flow data [ <i>Longitudinal Employer-Household Dynamics (LEHD)</i> ].



## Appendix A2 - Enforceability Index of Noncompetes (NCI)

State	NCI	Period	State	NCI	Period
Alabama	5	2000–2024	Missouri	7	2000–2018
Alaska	3	2000–2024	Missouri	6	2019–2024
Arizona	3	2000–2024	Montana	2	2000–2024
Arkansas	5	2000–2024	Nebraska	4	2000–2024
California	0	2000–2024	Nevada	5	2000–2024
Colorado	2	2000–2011	New Hampshire	2	2000–2012
Colorado	3	2012–2024	New Hampshire	1	2013–2018
Connecticut	3	2000–2024	New Hampshire	2	2019–2024
Delaware	6	2000–2024	New Jersey	4	2000–2024
Florida	9	2000–2024	New Mexico	2	2000–2024
Georgia	5	2000–2004	New York	3	2000–2024
Georgia	6	2005–2010	North Carolina	4	2000–2024
Georgia	7	2011–2024	North Dakota	0	2000–2024
Hawaii	3	2000–2006	Ohio	5	2000–2004
Hawaii	4	2007–2024	Ohio	6	2005–2024
Idaho	6	2000–2008	Oklahoma	1	2000–2024
Idaho	7	2009–2024	Oregon	6	2000–2007
Illinois	5	2000–2011	Oregon	5	2008–2024
Illinois	6	2012–2013	Pennsylvania	6	2000–2024
Illinois	5	2014–2020	Rhode Island	3	2000–2024
Illinois	3	2021–2024	South Carolina	5	2000–2010
Indiana	5	2000–2024	South Carolina	4	2011–2024
Iowa	6	2000–2024	South Dakota	5	2000–2024
Kansas	6	2000–2007	Tennessee	7	2000–2024
Kansas	7	2008–2024	Texas	3	2000–2010
Kentucky	6	2000–2014	Texas	4	2011–2024
Kentucky	5	2015–2024	Utah	6	2000–2024
Louisiana	4	2000–2001	Vermont	5	2000–2005
Louisiana	0	2002–2003	Vermont	6	2006–2024
Louisiana	4	2004–2024	Virginia	3	2000–2005
Maine	4	2000–2024	Virginia	4	2006–2013
Maryland	5	2000–2024	Virginia	5	2014–2024
Massachusetts	6	2000–2018	Washington	5	2000–2024
Massachusetts	4	2019–2024	West Virginia	2	2000–2024
Michigan	5	2000–2024	Wisconsin	3	2000–2009
Minnesota	5	2000–2023	Wisconsin	4	2010–2015
Minnesota	0	2024–2024	Wisconsin	5	2016–2024
Mississippi	4	2000–2008	Wyoming	4	2000–2021
Mississippi	5	2009–2024	Wyoming	3	2022–2024