Non-Compete Agreements and Capital Structure Decisions

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Abstract

Executives choose more conservative capital structures when they face greater unemployment risk due to mobility restrictions. Following an increase in the enforceability of non-compete agreements (NCAs), which exogenously increases executives' unemployment risk by limiting their outside options, firms that face high competition in the labor market decrease their leverage. Increased enforceability of NCAs also decreases the proprietary information loss risk for firms. I exploit the incongruence between the location of the firms' headquarters and major operations to empirically distinguish between the two key channels. The results point to the emergence of a risk-related agency conflict stemming from inflexible labor markets.

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1. Introduction

The nature of the firm has changed over the past forty years. Factors giving a competitive advantage to the firm are now embedded in its human capital (Zingales, 2000). Key employees possess intimate knowledge of the firm's trade secrets, suppliers and customers, strategic plans, processes, designs, and other soft information that makes the firm unique. This creates risks both for the firm and the employees. A key employee can do significant economic damage to the firm by joining a competitor and divulging proprietary information (Klasa et al., 2018; Kini et al., 2020). At the same time, to counteract such behavior, firms often impose post-employment restrictions on key employees, which, in turn, exposes employees to greater unemployment risk by limiting their outside options (Kini et al., 2020). In this paper, I study how these risks affect corporate decisions. My goal is to further the understanding of how human capital and, particularly, labor market frictions play into the set of firm decisions.

Specifically, I examine the impact of the mobility risk of executives on capital structure. Amongst all employees, the departure of an executive to work for a competitor is likely to cause the greatest economic damage to the firm (Kini et al., 2020). Further, unlike rank-and-file workers, executives are in charge of capital structure decisions (Graham and Harvey, 2001), which may give rise to interesting implications. In his review of the literature studying the impact of a firm's workforce on capital structure, Matsa (2018) points to the increasing importance of labor mobility risk and the potential loss of firm-specific human capital as labor market frictions and urges their integration in capital structure research.

I exploit exogenous staggered changes in the enforceability of non-compete agreements (NCAs) by U.S. state courts and legislative bodies to test the impact of labor mobility restrictions on firms' leverage. NCAs are clauses in employment contracts that forbid individuals from working for a competitor or starting competing firms for a certain period after leaving their employer. Garmaise (2011) shows that increased enforceability of NCAs reduces executive mobility, and Marx (2011) finds that ex-employees subject to NCAs are more likely to take career detours. Jeffers (2020) documents mobility declines following increased enforceability of NCAs among a large set of workers.

I propose two alternative hypotheses on the relationship between increased enforceability of NCAs and leverage. The first hypothesis is based on the idea that increased enforceability of NCAs increases the personal unemployment risk for the CEO. It does so directly by limiting executives' outside options and indirectly by increasing the probability of executives being laid off. The indirect channel was proposed by Kini et al. (2020) who show that the firm is more likely to fire an executive following an increase in the enforceability of NCAs because the executive is more restricted from working for a competitor and is thus limited in doing economic damage to the firm by joining a competitor. However, executives are in a position to counteract this increased risk because their job security typically depends on the firm's financial condition (Eckbo et al., 2016), and they are in charge of capital structure decisions (Graham and Harvey, 2001). I therefore hypothesize that following increased enforceability of NCAs, which increases executives' unemployment risk, firms decrease their leverage (*the unemployment risk hypothesis*).

The second hypothesis is based on the idea that increased enforceability of NCAs decreases the proprietary information loss risk for the firm. According to a survey sponsored by the U.S. Chamber of Commerce, the primary source of risk that the firm will lose its trade secrets and other proprietary information to rivals is the mobility of its employees.[1] In the presence of this risk, it is optimal for firms to have "deep pockets" as they allow for a prompt response against predatory rivals and help prevent attacks in the first place by signaling the ability to retaliate (Telser, 1966; Poitevin, 1989; Bolton and Scharfstein, 1990). Thus, I hypothesize that a reduction in the mobility of a firm's employees with the knowledge of trade secrets and, consequently, in the risk of losing trade secrets to rivals will result in the firm optimally increasing its debt ratio (*the proprietary information hypothesis*).

The two main hypotheses reveal that the interests of the manager and the firm are in conflict. Specifically, whereas managers want to reduce the firm's risk by reducing leverage to compensate for the increase in their personal unemployment risk, the firm wants to take on additional risk by increasing

[1] See "Trends in Proprietary Information Loss," *ASIS* International, September 2002.

leverage to compensate for the reduced risk from losing proprietary information. In agency theory, a conflict of interest that arises due to differences in risk aversion is often referred to as the 'playing it safe' agency conflict (Jensen and Meckling, 1976; Gormley and Matsa, 2016).

I use a difference-in-difference-in-differences (triple differences) approach to study how changes in the enforceability of NCAs affect firms' capital structures. Changes in the enforceability of NCAs should have a more pronounced effect on firms with more competitors in the labor market where labor markets are defined as industries within a state. This is because the enforceability of NCAs is limited to within state and within industry boundaries. To capture the changes in the enforceability of NCAs, I use the non-compete enforceability index (NCI), which is constructed as follows. One point is assigned to each jurisdiction for each question if the jurisdiction's enforceability of that dimension of noncompetition law exceeds a given threshold. Criteria considered include the duration of the covenant, its geographic scope, an employer's valid, protectable interest in the covenant, and others. The answers to the twelve questions are then used to construct the NCI. The possible range for the NCI is from zero to twelve. Higher values of the index are associated with stricter enforceability of NCAs. And, finally, changes in the NCI may come from two sources: a state court's decision or the decision of a state's legislative body.[2]

I find that following an increase in the enforceability of NCAs, affected firms that face high competitor concentration in the labor market decrease their leverage relative to otherwise similar firms in non-affected states, a result consistent with the unemployment risk hypothesis. The results are both statistically and economically significant. My estimates imply that following a median (1 point) increase in the NCI, affected firms that face high competitor concentration decrease their net book leverage by 4.11% relative to the sample mean. Further, I document a non-linearity in the effect of changes in the enforceability of NCAs on firms' leverage – the lower the magnitude of change in the NCI (e.g., a 1 point vs. a 3 point

[2] In one of the empirical tests conducted later in the paper, I construct the index based on court decisions only to alleviate endogeneity concerns, and then re-estimate my main models. The results obtained from this exercise are consistent with my main findings presented below.

change), the greater the point for point change in leverage. In regressions that omit certain changes in the baseline NCI of greater than the median and minimum 1-point magnitude, the percentage decrease in net book leverage for a 1-point increase in the NCI more than doubles.

The validity of a difference-in-differences experiment requires the assumption of parallel trends in the treated and control groups. Although one can never directly test the underlying identification assumption, there exist several falsification tests to support its validity. Two of the more widely used falsification tests are (i) checking that timing of observed change in the dependent variable coincides with timing of event (i.e., no pre-trend) and (ii) checking for treatment reversal. I am not able to use either of these two tests in my empirical setting because I employ an index rather than an indicator variable to capture changes in the enforceability of NCAs. The issue is that changes in the NCI can vary both in magnitude and direction for any particular state. For example, in Texas, there were a total of five changes during my sample period: from 4 to 5 in 1990, from 5 to 3 in 1995, from 3 to 4 in 2007, from 4 to 5 in 2010, and from 5 to 6 in 2012. It is not feasible to determine a pre-trend or a reversal in such a setting. Note that my addition of a third difference to the standard difference-in-differences model mitigates a concern that an omitted variable is driving the results.

A legal doctrine closely related to the concept of NCAs is the Inevitable Disclosure Doctrine (IDD), which increases the protection of a firm's trade secrets by reducing the mobility of its workers. Klasa et al. (2018) show that following the adoption of the IDD by U.S. state courts, a firm increases its leverage relative to unaffected rivals. By design, both NCAs and the IDD have similar intentions – to prevent departing employees from using a firm's trade secrets in another firm that competes with their former employer. However, as my results show, they elicit different capital structure decisions from firms. I posit that the primary reason for the difference in the results stems from the fact that the adoption of the IDD does not increase executives' unemployment risk to the same extent that the increased enforceability of NCAs does. Indeed, while there is evidence that increased enforceability of NCAs increases executives'

unemployment risk by increasing the probability of them being laid off (Kini et al., 2020), there is no such evidence in the context of the adoption of the IDD.

I exploit the fact that a firm's corporate office may not be where its major operations are located to empirically distinguishing between the unemployment risk and the proprietary information channels.[3] An executive's unemployment risk is unlikely to be directly affected by the changes in the enforceability of NCAs in the state of major operations because (i) the CEO works at the firm's headquarters and (ii) the enforceability of NCAs is governed by employment law under which the relevant jurisdiction is the state where the employee works. However, the risk of proprietary information loss is affected by the changes in the enforceability of NCAs in the state of major operations given that workers familiar with a firm's trade secrets may be employed there. I therefore test whether firms' capital structures are affected by the changes in the enforceability of NCAs in the state of their major operations. I find no evidence of such a relationship. Interestingly, the adoption of the IDD in the state of major operations does result in a marginally higher leverage.

I document a number of other results that are consistent with my main findings. I show that the decrease in leverage following increased enforceability of NCAs is likely suboptimal for shareholders given (i) a reduction in the risk of proprietary information loss for the firm and (ii) no change in the cost of debt financing. Further, the way leverage changes following increased enforceability of NCAs is consistent with the dynamic rebalancing of capital structure. I also show that near-term debt, which places a greater demand on a firm's current cash flow and thus has a more significant influence on executives' unemployment risk, declines more so than does the longer-term debt. The cross-sectional heterogeneity in firms' response to increased enforceability of NCAs suggests that the decrease in leverage is driven by managers 'playing it safe'. Specifically, the decrease in leverage is concentrated among firms with greater profit variability and

[3] For example, Boeing is currently headquartered in Illinois, while its main factory is located in Washington. According to its website, as of September 26, 2020, 71,829 of its 161,133 employees are located in Washington.

among financially constrained firms. Finally, I show that the reduction in leverage is not driven by the interests of rank-and-file employees.

In a closely related paper, Klasa et al. (2018) show that the risk employee mobility creates for the firm plays a prominent role in capital structure determination. I expand on that work by showing that the link between capital structure and worker mobility operates through an additional channel. The post-employment restrictions firms often use to address the risk of proprietary information loss exposes key employees to greater unemployment risk (Kini et al., 2020). This risk, in turn, has bearing on key employees' corporate decision making. Further, my results suggest that these decisions may not always be in the best interests of the shareholders and therefore point to the emergence of a risk-related agency conflict stemming from inflexible labor markets. Prior work has examined the 'playing it safe' agency conflict stemming from weakened external shareholder governance (Gormley and Matsa, 2016).

More broadly, my findings contribute to the literature studying how labor market frictions affect firms' capital structures (e.g., Matsa (2010); Agrawal and Matsa (2013); and Simintzi et al. (2015)). Another related stream of literature examines the impact of exogenous labor mobility restrictions on executive turnover and compensation (Kini et al., 2020), investment (Garmaise, 2011; Qiu and Wang, 2018; Jeffers, 2020), and entrepreneurship (Jeffers, 2020). Finally, whereas this paper studies how labor mobility affects firms' capital structure decisions, related empirical work examines how capital structure decisions affect employee mobility (e.g., Babina, 2020; Baghai et al., 2020).

The rest of the paper is organized as follows. Section 2 develops the main hypotheses. Section 3 discusses the data construction and the empirical strategy. Section 4 presents the main results and the results from a falsification test. Section 5 explores the channels through which capital structure changes. Section 6 contains the results from cross-sectional tests that pin down the economic mechanism behind the main results. Section 7 presents the results from robustness tests. Section 8 concludes.

2. Hypothesis Development

Executives value job security because getting laid off from a job can be costly. For example, relatively few executives find comparable employment after termination (Gilson, 1989; Fee and Hadlock, 2004). Increased state-level enforceability of NCAs increases executives' unemployment risk by increasing both the probability of them being fired (*Mechanism 1*) and the costs borne by executives following termination (*Mechanism 2*). This is because executives' outside option upon departure is limited following increased enforceability of NCAs.

Specifically, *Mechanism 1* works as follows. Throughout an executive's tenure with a firm, the executive will acquire knowledge of the firm's trade secrets, key suppliers and customers, strategic plans, and strengths and weaknesses vis-à-vis its competitors (Bishara et al., 2015; Klasa et al., 2018). In the absence of an NCA, the firm will be reluctant to fire the executive because the executive can do significant economic damage to the firm by joining a competitor and divulging proprietary information. In contrast, in the presence of an NCA, the firm is more likely to fire the executive because the executive is restricted from working for a competitor in any capacity for a specified period. Consistent with this idea, Kini et al. (2020) find that following increased state-level enforceability of NCAs, firms are more likely to fire executives for poor performance. There is also evidence in support of *Mechanism 2* that increased state-level enforceability limits executives' outside opportunities. For example, Marx (2011) finds that ex-employees subject to NCAs are more likely to take career detours. In a similar vein, Garmaise (2011) finds that increased enforceability of NCAs reduces within-industry executive transfers.

Executives are in a position to decrease their unemployment risk by adjusting the risk consistent with *Mechanism 1*. An executive's job security typically relies on the firm's financial condition, and although forced executive terminations are relatively rare among U.S. public firms (Taylor, 2010), they spike in times of financial distress (Eckbo et al., 2016). Executives, who are in charge of capital structure decisions (Graham and Harvey, 2001), may decide to decrease the amount of debt on their balance sheets to reduce the probability of encountering financial distress and, thereby, the probability of being laid off. I

thus hypothesize that following increased enforceability of NCAs, which increases executives' unemployment risk, firms decrease their leverage (*the unemployment risk hypothesis*).

Alternatively, increased enforceability of NCAs may lead the firm to increase its debt ratio optimally. According to a survey referenced earlier, the primary source of risk that the firm will lose its trade secrets and other proprietary information to rivals is the mobility of its employees. In the presence of this risk, it is optimal for firms to have "deep pockets" as they allow for a prompt response against predatory rivals and help prevent attacks in the first place by signaling the ability to retaliate (Telser, 1966; Poitevin, 1989; Bolton and Scharfstein, 1990). Thus, I hypothesize that a reduction in the mobility of a firm's employees with the knowledge of trade secrets and, consequently, in the risk of losing trade secrets to rivals will result in the firm optimally increasing its debt ratio (*the proprietary information hypothesis*).[4] This hypothesis was first proposed and tested by Klasa et al. (2018) in the context of the adoption of the IDD, which increases the protection of a firm's trade secrets by reducing the mobility of the firm's workers. The authors show that following the adoption of the IDD by U.S. state courts, a firm increases its leverage relative to unaffected rivals.[5]

The two main hypotheses reveal that the interests of the manager and the firm (or the shareholders) are in conflict. Specifically, whereas managers want to reduce the firm's risk to compensate for the increase in their personal unemployment risk, the firm wants to take on additional risk to compensate for the reduced risk from losing proprietary information. Viewed through the lens of a trade-off theory of capital structure (Graham, 2000), following increased enforceability of NCAs, the costs of financial distress increase from the perspective of the managers and decrease from the perspective of the firm. [6] In agency theory, a conflict

[4] He (2018) finds that firms hold less cash when the enforceability of NCAs increases – a result consistent with the proprietary information hypothesis. As I discuss below, this evidence is inconsistent with what I find in a similar empirical setting. The difference in findings stems from different data and empirical strategies employed in the two papers.

[5] Islam et al. (2020) show that the increase in leverage following the adoption of the IDD documented by Klasa et al. (2018) is not present among firms managed by professional (as opposed to founder) CEOs.

[6] Under the trade-off theory of capital structure, a firm balances the costs of financial distress with the benefits obtained from debt tax shields (Graham, 2000).

of interest that arises due to differences in risk aversion is often referred to as the 'playing it safe' agency conflict (Jensen and Meckling, 1976; Amihud and Lev, 1981; Smith and Stulz, 1985; Holmstrom, 1999; Gormley and Matsa, 2016). It has been formalized in Parrino et al. (2005), who show that as the manager becomes more risk-averse (e.g., following increased enforceability of NCAs in my setting), risk-reducing projects become more attractive and risk-increasing projects become less attractive. In other words, distortions in investment decisions increase with managerial risk aversion.

3. Data and Empirical Strategy

3.1 Data and Sample Selection

The data on state-level enforceability of NCAs are from three sources: Bird and Knopf (2015) for the period from 1978 to 1994, Garmaise (2011) for the period from 1994 to 2004, and Kini et al. (2020) for the period from 2005 to 2014. Garmaise (2011) considered twelve questions analyzed by Malsberger (2004) and assigned one point to each jurisdiction for each question if the jurisdiction's enforceability of that dimension of noncompetition law exceeded a given threshold. Criteria considered include the duration of the covenant, its geographic scope, an employer's valid, protectable interest in the covenant, among others. The answers to the twelve questions are then used to construct the non-compete enforceability index (NCI). The possible range for the NCI is from zero to twelve. In regressions, NCI is scaled by 12 to ease interpretation. Higher values of the index are associated with stricter enforceability of NCAs by employers in that state. The other two studies followed the methodology of Garmaise (2011) in constructing the NCI for different time periods.

During my sample period, 16 states experienced changes in the enforceability of non-competes, and some of these states experienced multiple changes bringing the total number of changes to 26. Table 1 lists the changes in the NCI, and Internet Appendix Figure 1 illustrates them. The specific cases and laws that led to changes in the NCI are outlined in Internet Appendix Table 12. The largest in-sample change

happened in Michigan in 1985 when the Michigan Antitrust Reform Act (MARA) repealed the ban on non-competes.[7] The median and minimum change in the NCI is of 1 point magnitude.

The variation in the enforceability of non-competes across states and over time was likely exogenous, an assumption central to my identification strategy. Changes in the enforceability index may come from two sources: a state court's decision or the decision of a state's legislative body. Of the 26 total changes in NCI during my sample period, 17 resulted from a state court's decision as opposed to the decision of a state's legislative body. In the former case, the decisions are deemed to be independent and immune to political pressure. In the latter case, changes in the enforceability of non-competes may be due to lobbying pressure by corporations in the state. However, in either case, the decision relies on the trade-off between the mobility of employees and the needs of the employer to protect its interests in customer relationships, business goodwill, or trade secrets (Arnow-Richman, 2001) and does not directly aim at affecting a firm's financial policy.

My sample consists of Compustat-CRSP firms headquartered in the U.S. from 1978 to 2014. Headquarters location data is from Compustat, and is based on a firm's most recent location. I exclude utilities (SIC codes 4900-4999) and financial firms (SIC codes 6000-6999). Missing values reduce the sample to 132,193 firm-year observations and 12,748 firms for the main OLS regressions. Summary statistics are provided in Table 2 and are in line with prior capital structure research. All continuous firm-level variables are winsorized at their 1st and 99th percentiles. The data on union coverage is from the Union Membership and Coverage Database available at www.unionstats.com. This database is constructed by Barry T. Hirsch and David A. Macpherson and provides private- and public-sector labor union coverage computed from the monthly household Current Population Survey (CPS) (see details in Hirsch and Macpherson (2003)). The industry level union coverage estimates by Census detailed Industry Codes (CIC)

[7] Note that the NCI takes the value of 5 in Michigan in 1986 instead of in 1985 given that the construction of the index follows Garmaise (2011) who assumed that the legal changes affect firm decisions in the calendar year following their occurrence.

are available beginning in 1983. I follow the two-step procedure of Benmelech et al. (2018) in mapping CIC codes to SIC codes for the 1978-2014 period.

3.2 Empirical Strategy

3.2.1 State of HQ

I use a difference-in-difference-in-differences (triple differences) approach to study how changes in the enforceability of non-compete agreements affect the capital structures of firms. The main analysis is conducted at the state of headquarters level, given that the enforceability of NCAs is governed by employment law, not corporate law, under which the relevant jurisdiction is the state where the employee works.

3.2.2 Employer Concentration

Changes in the enforceability of non-competes should have a more pronounced effect on firms with more competitors in the labor market. I define labor markets as industries within a state. The rest of this subsection discusses the reasons for this definition and the conjecture that precedes it, but they are all based on the premise that NCAs constrain the movement of employees to local rivals.

First, as pointed out by Younge and Marx (2016), "Although firms outside the industry may seek employees with similar skills if they serve different customers and markets the noncompete would not apply." Second, Yonker (2017) finds the existence of geographical segmentation in the market for CEOs, i.e., firms have a strong bias towards hiring CEOs from their own headquarters' state. Third, the enforcement of non-compete agreements is considerably more difficult across state boundaries (Cheskin and Lerner, 2003; Garmaise, 2011). Garmaise (2011) notes that the governing case on the latter point is *Application Group, Inc. v. Hunter Group, Inc.*, 61 Cal. App. 4th 881, 72 Cal. Rptr. 2d 73 (1st Dist. 1998), "in which the Maryland-based employee of a Maryland firm who had signed a noncompetition agreement

moved to California to work for a California-based competitor. A California court voided the noncompetition agreement based on California law. This case also showed that courts would not be bound by a choice-of-law provision in the contract asserting under which state law the noncompetition agreement was to be enforced." Finally, NCAs usually have a restricted geographical scope such as a state, a county, a city, or a mile radius around the place of business (Malsberger, 2004).

Using this definition of labor markets, for each year, I calculate a firm's competitor concentration in the labor market as follows:

$$Competitor\ Concentration_{ijs} = \frac{sale_{js} - sale_i}{sale_j - sale_i} \quad (1)$$

where subscripts indicate firm (*i*), two-digit SIC industry (*j*), and state of firm *i*'s headquarters (*s*); $sale_i$ are the total sales of firm *i*; $sale_j$ are the total sales of industry *j*; $sale_{j,s}$ are the total sales of industry *j* generated by firms headquartered in state *s*. In words, a firm's competitor concentration is defined as the fraction of total industry sales (excluding those of the firm itself) generated by in-state competitors. Additionally, to ease interpretation in regression analyses, I replace this continuous measure with a dummy variable equal to 1 for firms with above sample median value of *Competitor Concentration*, and 0 otherwise.[8] Note that I refer to this indicator variable as *Employer Concentration*, and it captures competition in the labor market rather than in the product market. Since it is not obvious that is what it does, I discuss how this measure has been used in the previous literature and why it is appropriate in my setting.

Garmaise (2011) introduced this measure to study how enforceability of NCAs affects executive mobility, executive compensation, and firm investment.[9] He argued that for firms with considerable

[8] Two other advantages of using an indicator variable are that it (i) imposes less structure on the data than does a continuous variable (i.e., avoids the linear functional form assumption) and (ii) is less influenced by outliers. The results using the continuous measure, i.e., *Competitor Concentration*, are presented in Internet Appendix Table 4 and are qualitatively similar to the main results documented in Table 3. The reason for the statistically insignificant results when using the continuous measure may be measurement error. *Competitor Concentration* is an imprecise concept with capricious observable proxies, and discretizing a continuous variable that is measured with error is one of the oldest ways to deal with measurement error.

[9] Note that Garmaise (2011) and several subsequent studies refer to this measure as *In-State Competition*.

competitor concentration, an increase in the non-compete enforceability index "will substantially reduce the probability that an executive will leave the firm and join a competitor" (for the four reasons I outlined above). Garmaise (2011) points out that the competitor concentration measure may be viewed as agglomeration, in which case my triple-diff model tests for whether NCAs matter more in agglomerations. Using the same framework, Younge and Marx (2016) study how the joint effect of non-compete enforceability and competitor concentration affects firm value while Kini et al. (2020) study how it affects CEO turnover and compensation.

Additionally, the evidence on the negative relation between stricter enforceability of non-compete agreements and employee mobility is particularly compelling for firms with more competitors in the labor market, as defined in this paper. Indeed, Garmaise (2011) finds that increased enforceability of non-compete agreements reduces within-industry executive transfers, and He (2018) uses a monthly survey of a nationally representative sample of 60,000 households and finds that higher non-compete enforceability decreases the mobility of managers and professional workers to in-state competitors. Jeffers (2020) utilizes employment histories of 52 million US workers from LinkedIn to document that following an increase in the enforceability of non-compete agreements, departure rates at treated companies decline substantially with the effects pronounced for same industry transfers.

Figure B.1 depicts the median value of Employer Concentration in 2010 across U.S. states for four 2-Digit SIC industries: Transportation Equipment, Electronic & Other Electric Equipment, Petroleum & Coal Products, and Lumber & Wood Products. Consistent with intuition, the states with the highest median values of Employer Concentration for the four industries are Michigan, California, Texas, and Washington, respectively.

3.2.3 Empirical Model

I interact the enforceability index with competitor concentration to determine whether the reduced outside option of executives following an increase in the enforceability of NCAs results in higher or lower leverage. I run the following triple differences regression:

$$\frac{Debt_{ist}}{Value_{ist}} = \alpha_1 NCI_{st} + \alpha_2 Employer\ Concentration_{it} + \alpha_3 NCI_{st} * Employer\ Concentration_{it} + X\beta + \omega_t + \mu_i + \varepsilon_{ist} \quad (1)$$

where $\frac{Debt_{ist}}{Value_{ist}}$ is the level of (net) debt as a fraction of the firm's total book value. Subscripts indicate firm (*i*), state (*s*), and year (*t*); NCI_{st} is the level of the non-compete enforceability index scaled by 12 (and thus ranging from 0 to 1) with higher values of the index associated with stricter enforceability of non-competes by employers in that state; [10] $Employer\ Concentration_{it}$ is a dummy variable that equals one for firms with above-median values of *Competitor Concentration* (defined as the fraction of total industry sales (excluding those of the firm itself) generated by in-state competitors (Garmaise, 2011)), and zero otherwise; X is a set of control variables, which are measured in year *t*;[11] year effects are denoted by ω_t; and μ_i represents firm fixed effects. The standard errors are corrected for heteroskedasticity and clustering at the state of headquarters level because NCI_{st} is a state-level variable. The main coefficient in this triple differences specification is α_3, which identifies the effect of changes in the enforceability of non-compete agreements for firms facing different levels of competitor concentration (high vs. low). Control variables include size, market-to-book, return on assets, fixed assets, cash flow volatility, a dividend dummy, an indicator for whether a state has adopted the Inevitable Disclosure Doctrine (IDD), the natural logarithm of state population and state unemployment rate. Variable definitions are provided in Appendix A.

[10] One potential issue with this regression model is that firms choose to locate their headquarters based on the level of enforceability of NCAs in the state. However, Garmaise (2011) rules out this possibility. He argues that the local NCA enforceability regime has not been proposed as a first-order determinant of firm location in the existing literature, which emphasizes such factors as the availability of natural resources, state taxes, founder's home location, etc.

[11] I address concerns about biases arising from including endogenous controls in the regressions by estimating the main regressions without controls.

4. NCAs and Capital Structure Decisions

4.1 Main Results

The results from estimating regression (1) with and without firm-level controls are presented in Table 3. The dependent variables are net book leverage in columns 1 and 2 and book leverage in columns 3 and 4. The estimates show that both net book leverage and book leverage for the average firm decrease after an increase in state-level enforceability of NCAs – a result consistent with the unemployment risk hypothesis.[12] The negative relationship between the enforceability of NCAs and leverage is both statistically (at the 1% level) and economically significant. In terms of economic significance, the coefficient on the key interaction term in column 2 of Table 3 implies that the change in net book leverage relative to firms in unaffected states for a one-point increase in NCI is (0.056-0.093)/12 = -0.044/12 = -0.00308 cents per dollar of book assets when *Employer Concentration* is equal to one, or -4.11% of the sample mean for net book leverage of 0.075.

As discussed above, the variation in the enforceability of non-competes across states and over time was likely exogenous. Nevertheless, as a robustness check, I estimate the main regression models after omitting changes in the enforceability of NCAs that were the result of a legislative rather than a court decision. The goal is to reduce concerns that legislative changes are due to lobbying pressure by corporations in the state. Internet Appendix Table 1 lists the changes in the non-compete enforceability index due to court decisions only – a variable that I label *NCI Legal Cases*. The results are presented in Table 4. The dependent variables are net book leverage in columns 1 and 2 and book leverage in columns 3 and 4. The coefficient on the key interaction term is negative and statistically significant in all columns.

[12] The results from estimating models that include stand-alone baseline variables separately, i.e. NCI and Employer Concentration, are presented in Internet Appendix Tables 2 and 3, respectively. By themselves, these variables does not have a statistically significant effect on leverage.

This suggests that an average firm facing high employer concentration in the labor market decreases its leverage following an increase in the enforceability of NCAs.

Of note is the increase in the economic magnitude of the estimates in Table 4 relative to Table 3. The coefficient on the key interaction term in column 2 of Table 4 implies that the change in net book leverage relative to firms in unaffected states for a one-point increase in NCI is (0.02-0.116)/12 = -0.096/12 = -0.008 cents per dollar of book assets when Employer Concentration is equal to one, or -10.67% of the sample mean for net book leverage of 0.075. This is more than twice the economic magnitude of the estimates in Table 3. It is important to note that *NCI Legal Cases* omits nine changes in the baseline *NCI*, including three changes of greater than the median and minimum 1-point magnitude: Michigan in 1986 (5 point change, which is an in-sample maximum), Louisiana in 1990 (3 point change) and Florida in 1997 (2 point change). I conclude that there is non-linearity in the effect of changes in the enforceability of NCAs on firms' leverage – the greater the magnitude of the change in the enforceability of NCAs, the lower the point for point change in leverage.

Finally, I test whether the joint effect of [*NCI* + (*NCI***Employer Concentration*)] is different than zero. The reason for this test is that if the joint significance is not different than zero, then the interpretation that the CEOs reduce leverage would be incorrect. The joint effect of the double interaction term is reported in the last line of estimates in Table 4 with the p-value for statistical significance as indicated by an F-test for joint significance. Estimates for the double interaction term are negative and significant at the 10% level in Column 2 of Table 4 where the dependent variable is net book leverage, and are negative and statistically insignificant at conventional levels (p-value = 0.164) in Column 4 of Table 4 where the dependent variable is book leverage.

4.2 NCAs and Trade Secrets Law

The increased enforceability of NCAs and the adoption of the IDD both reduce the mobility of employees and thereby enhance the protection of the firms' interests in customer relationships, business goodwill, and trade secrets. However, as Table 3 shows, they elicit different capital structure decisions from firms – the coefficient on IDD is positive, consistent with the findings in Klasa et al. (2018). The question is how so. I posit that the primary reason for the difference in the results stems from the fact that the adoption of the IDD does not increase executives' unemployment risk to the same extent that the increased enforceability of NCAs does. Indeed, while there is evidence that increased enforceability of NCAs increases executives' unemployment risk by increasing the probability of them being laid off (Kini et al., 2020), there is no such evidence in the context of the adoption of the IDD.

It is interesting to explore the legal and institutional reasons behind the different effects of the IDD and NCAs on managerial unemployment risk. In a recent *WSJ* article Russell Beck, a partner at the Beck Reed law firm, notes that "Non-compete agreements can offer employers more protection than trade-secrets laws because there's 'a bright-line test'… The problem with relying on trade-secrets law is that it's very hard to discover whether somebody has used your trade secrets"[13]. According to USLegal.com, "a *bright-line rule* or *bright-line test* is a clear, simple, and objective standard which can be applied to judge a situation. In other words, it is a judicial rule that helps to resolve ambiguous issues by setting a basic standard that clarifies the ambiguity and establishes a simple response. The purpose of a bright-line rule is to produce predictable and consistent results in its application." Mr. Beck further notes that "Employers are less likely to bring trade-secrets lawsuits because these cases are more costly, often requiring depositions and more extensive discovery."

A case in point is Comprehensive Technologies International, Inc. v. Software Artisans, Inc. that involved both non-compete and trade secrets claims (Arnow-Richman, 2001). An employee responsible for developing a software product left CTI and established a competing company along with several former

[13] See "Litigation Over Noncompete Clauses is Rising", *The Wall Street Journal*, August 14, 2013.

employees. The court rejected CTI's trade secrets claim because it failed to show that Software Artisans' competing product was based on CTI's proprietary technology. However, the court decided to enforce the employee's non-compete concluding that "as the individual primarily responsible for the design, development, marketing and sale of CTI's software, [the employee] became intimately familiar with every aspect of CTI's operation, and necessarily acquired information that he could use to compete with CTI in the marketplace."

Further, unlike in the case of IDD, there is explicit negotiation between two parties regarding the inclusion of NCAs in executives' employment contracts. Here's an excerpt from another *WSJ* article emphasizing this point: "Executives have the most leverage to alter a non-compete before accepting a job offer, legal specialists say. If the company wants a new management hire badly enough, it will make concessions, Russell Beck, a Beck Reed Partner, has found. The lawyer recently represented a Massachusetts executive wooed by a health-care company to be its vice president of professional services. Mr. Beck persuaded the company to halve a two-year non-compete requirement. 'The benefit of having the executive sign the non-compete agreement outweighed the risk of harm caused by the executive's competition after the first year,' he recollects." [14]

Taken together, the presence of the 'bright-line test' and explicit negotiation regarding the inclusion of NCAs in executives' employment contracts hint at different economic mechanisms at play in contexts of the adoption of the IDD and the increased enforceability of NCAs.

4.3 Falsification Test: State of HQ vs. State of Major Operations

I exploit the fact that a firm's corporate office may not be where its major operations are located to empirically distinguishing between the unemployment risk and the proprietary information channels. For example, Boeing is currently headquartered in Illinois, while its main factory is located in Washington.

[14] See "Companies Loosen the Handcuffs on Non-Competes", *The Wall Street Journal,* August 12, 2013.

According to its website, as of May 29, 2014, 81,305 of its 163,693 employees are located in Washington, compared to around 600 employees in Illinois. The executive's unemployment risk is unlikely to be directly affected by the changes in the enforceability of NCAs in the state of major operations because (i) the CEO works at the firm's headquarters and (ii) the enforceability of NCAs is governed by employment law under which the relevant jurisdiction is the state where the employee works. However, the risk of proprietary information loss is affected by the changes in the enforceability of NCAs in the state of major operations given that workers familiar with a firm's formulas, processes, designs, business plans etc. may be employed there. I therefore test whether firms' capital structures are affected by the changes in the enforceability of NCAs in the state of their major operations.

Garcia and Norli (2012) compute the number of times a 10-K report mentions a U.S. state name for all 10-K filings from the SEC's online database from 1994 to 2008. More frequently mentioned states tend to be more informative of the location of a firm's major operations than less frequently mentioned states because the state mentions in the 10-K filings are related to the location of a firm's sales, properties, and employees (Garcia and Norli, 2012). To identify the state of major operations for firms in my sample, I follow Atanassov and Liu (2019) and find the most mentioned state for each firm-year observation. I then use the most frequently occurring most mentioned state across all years for a given firm as the most relevant state for that firm. I merge my firm-level data with the state-level enforceability of NCAs data by the state of major operations and re-calculate the Employer Concentration measure also based on the state of major operations. I refer to the two new key independent variables as *NCI Alt.* and *Employer Concentration Alt.* Also, for completeness, I complement this panel with an IDD indicator variable defined at the state of major operations (*IDD Alt.*).

The sample for this falsification test is different than that used for the main analysis in that it misses firms not in the SEC's online database in the period from 1994 to 2008. It is important to show that the headquarters result continues to hold in this subsample to be able to compare the main channel to the falsified channel. I report the headquarters results in this restricted sample in Internet Appendix Table 13 –

the estimates are consistent with those for the main sample in Table 3. For reference, the most mentioned state is different from the state of the HQ for 35.42% of firm-year observations.

The results from the falsification test are presented in Table 5. There is no statistically significant relationship between the enforceability of NCAs in firms' states of major operations and leverage. This finding contrasts with a negative relationship between the enforceability of NCAs in the states of firms' headquarters and leverage documented earlier. Interestingly, the coefficient on the *IDD Alt.* indicator variable is positive and marginally statistically significant. I argue that the difference between the former and latter results in Table 5 is due to different economic mechanisms at play in the contexts of the adoption of the IDD and the enforceability of NCAs, as discussed in the previous sub-section.

5. How Does the Capital Structure Change?

5.1 Leverage Decomposition and the Cost of Debt

It is interesting to examine whether the results documented in the previous section are driven by the changes in the value of the firm (i.e., the denominator in calculating leverage) or by the changes in total debt outstanding (i.e., the numerator in calculating leverage). To this end, I regress the natural logarithms of book assets and total debt on a set of independent variables from Table 3. The results are reported in the first two columns of Table 6. The estimates reveal that the reduction in leverage is driven by the reduction in total debt outstanding. Total book assets remain unchanged following an increase in the enforceability of NCAs among firms facing high competitor concentration in the labor market.

Further, the reduction in total debt outstanding following an increase in the enforceability of NCAs is not driven by the changes in the cost of debt financing. In column 3 of Table 6, I measure the cost of debt as the ratio of total interest expense to the sum of a firm's total short-term liabilities and long-term debt,

and show that it is does not change following stricter enforceability of post-employment restrictions.[15] The decrease in leverage following increased enforceability of NCAs seems to be suboptimal for shareholders in light of reduced risk of proprietary information loss for the firm and the unchanged cost of debt financing.

5.2 Rebalancing of Capital Structure

In this sub-section, I examine how increased enforceability of NCAs affects such firms' financing choices as long-term debt issuance, long-term debt reduction, net debt issuance, sale of common stock, repurchases of common stock, and net equity issuance. These variables are defined as follows (Compustat data items in parentheses):

- *Long-Term Debt Issuance*: long-term debt issuance (*dltis*) scaled by book assets (*at*),
- *Long-Term Debt Reduction*: long-term debt reduction (*dltr*) scaled by book assets (at),
- *Net Debt Issuance*: the difference between *Long-Term Debt Issuance* and *Long-Term Debt Reduction* with *Long-Term Debt Reduction* being set to zero when missing,
- *Sale of Common Stock*: sales of common stock (*sstk*) scaled by book assets (*at*),
- *Repurchases of Common Stock*: repurchases of common stock (*prstkc*) scaled by book assets (*at*),
- *Net Equity Issuance*: the difference between *Sale of Common Stock* and *Repurchases of Common Stock* with *Repurchases of Common Stock* being set to zero when missing.

The results from regressing NCI, Employer Concentration and their interaction on these financing variables are presented in Table 7. All models include year and firm fixed effects and a set of control variables as in the previous tables.

[15] The coefficient on the key interaction term between NCI and Employer Concentration is positive and statistically significant at the 10% level, however, the total effect, i.e. the sum of the coefficients on the interaction term and the baseline NCI term, is indistinguishable from zero (-0.022 + 0.027)/12 = 0.0004.

The estimates in Table 7 show that neither the long-term debt issuance (column 1) nor the long-term debt reduction (column 2) change significantly on their own. However, net debt issuance, which is the difference between long-term debt issuance and long-term debt reduction, declines significantly (column 3). The last three columns of Table 7 show an increase common stock issuance (column 4) and a reduction in repurchases (column 5), which, taken together, result in an increase in net equity issuance (column 6). Overall, the patterns in Table 7 are consistent with the dynamic rebalancing of capital structure toward less debt and more equity following increased enforceability of NCAs.

5.3 Debt Maturity

Analyses of other measures of debt show patterns similar to those documented in Table 3. Table 8 reports estimates of the relation between NCI, employer concentration, and near-term debt due within 1 to 5 years. The coefficient on the key interaction term is negative and statistically significant in columns 1, 2, and 3 of Table 8, where the dependent variables are debt due within 1, 2, and 3 years, respectively. The statistical and economic significance of results in columns 4 and 5, where the dependent variables are debt due in 4 and 5 years, respectively, is lower. These estimates are consistent with an idea that near-term debt places greater demand on a firm's cash flow and thus has greater influence on managers' incentive to reduce risk.

6. Cross-Sectional Tests: Are Managers 'Playing it Safe'?

In this section, I report the results from three cross-sectional tests to further shed light on the economic mechanism of managers 'playing it safe'. Specifically, I look at the effects of profit variability and financial constraints on the relationship between leverage and the enforceability of NCAs. These tests are guided by the theory that predicts risk-reducing motives to be stronger at firms with a greater potential to reduce distress risk (Jensen and Meckling, 1976; Parrino et al., 2005). I also report the results from a test that shows that the reduction in leverage is not driven by the interests of rank-and-file employees.

6.1 Profit Variability

I examine whether the effect of changes in the enforceability of NCAs is more pronounced for firms with greater profit variability – Matsa (2010) used this variable as a proxy for a firm's exposure to financial distress. To test this conjecture, I estimate the following regression model:

$$\frac{Debt_{ist}}{Value_{ist}} = \alpha_1 NCI_{st} + \alpha_2 Employer\ Concentration_{it} + \alpha_3 Profit\ Variability_{it} + \alpha_4 NCI_{st} * Employer\ Concentration_{it} + \alpha_5 NCI_{st} * Profit\ Variability_{it} + \alpha_6 Employer\ Concentration_{it} * Constrained_{it} + \alpha_7 NCI_{st} * Employer\ Concentration_{it} * Profit\ Variability_{it} + X\beta + \omega_t + \mu_i + \varepsilon_{ist} \quad (2)$$

where variables and subscripts are defined as in regression (1). $Profit\ Variability_{it}$ is measured using the standard deviation of the change in earnings before depreciation and amortization, divided by lagged total assets (Matsa, 2010). In regressions, the ratio is normalized by its standard deviation to ease the interpretation of the estimates and is demeaned (with respect to the mean for the entire sample). The main coefficient in this specification is α_7, which identifies the effect of changes in the enforceability of NCAs for firms with different levels of profit variability and labor market competitor concentration.

Table 9 presents the results from estimating the regression model (2). In all regressions, the coefficient on the triple interaction term between the NCI, Employer Concentration, and Profit Variability is negative and statistically significant. This result suggests that managers of firms with a greater potential to reduce distress risk, lever the firm down more than managers of firms with a lower potential to reduce distress risk following a jump in their personal unemployment risk. The economic interpretation of the estimates is the following (based on column 2). A firm facing high competitor concentration with profit variability equal to the mean for the entire sample changes its net book leverage by (0.056 – 0.088)/12 = -0.032/12 = -0.00267 cents per book dollar of assets relative to an otherwise similar firm in a non-affected

state, which is -3.56% relative to the sample mean for net book leverage of 0.075.[16] A firm facing high competitor concentration with profit variability one standard deviation above the mean for the entire sample changes its net book leverage by -5.11% relative to the sample mean.

6.2 Financial Constraints

I study whether the effect of changes in the enforceability of NCAs is more pronounced for financially constrained firms. Financially constrained firms cannot easily raise external capital to alleviate cash shortfalls (Klasa et al., 2009) and, hence, are more susceptible to the risk of financial distress. I estimate a regression similar to model (2) but replace $Profit\ Variability_{it}$ with $Constrained_{it}$ defined as an indicator variable equal to one for firm-years with above sample median values of *WW Index*, and 0 otherwise. The *WW Index* is a financial constraints index from Whited and Wu (2006) computed as [-0.091**Cash Flow* – 0.062**Dividend dummy* + 0.021**Long-term debt* – 0.044**Size* + 0.102**Industry Sales Growth* – 0.035**Sales growth*]. Table 10 shows the results. Consistent with my conjecture, the coefficient on the triple interaction term between NCI, Employer Concentration, and Constrained is negative and statistically significant. This result suggests that managers of financially constrained firms reduce firms' risk more than the managers of financially unconstrained firms following an increase in their personal unemployment risk, consistent with the theory.

6.3 Unionization

In this sub-section, I report the results from a test that shows that the reduction in leverage is not driven by the interests of rank-and-file employees. To motivate this analysis, note that "an increase in financial leverage raises the costs required to compensate workers for their greater risk of unemployment." (Matsa,

[16] Note that the variable Profit Variability in the regression is normalized by its standard deviation and is demeaned and, thus, is equal to zero for a firm with average profitability.

2018). It is possible that when the enforceability of NCAs in a state increases, it makes it less attractive for employees in general (not just executives) to work in that state, which could result in firms in the state having to increase wages to retain and attract workers. Because higher leverage can also force a firm to increase salaries so it can retain and attract employees (see Matsa (2018) and references therein), after an increase in the enforceability of NCAs in a state, firms might decrease their financial leverage to offset the extent they might need to raise wages.[17]

Two pieces of evidence cast doubt on this alternative explanation. First, workers that sign NCAs typically account for a small fraction of a firm's total labor costs (Starr et al., 2019) and, hence, are unlikely to affect capital structure through cost-related mechanisms such as wages. Second, Prescott and Starr (2019) document that rank-and-file workers are mostly uninformed about the enforceability of NCAs. For example, 70% of workers working under an NCA do not even know that the enforceability of NCAs is determined at the state level. Third, unlike in the case of a firm's managers, an increase in state-level enforceability of NCAs is associated with *lower* (not higher) rank-and-file employee wages and a reduced return to job tenure due to the workers' reduced bargaining power (Balasubramanian et al., 2020; Starr, 2019). However, there is one group of employees that both accounts for a large fraction of a firm's total labor costs and has strong bargaining power – unionized workers (Matsa, 2010). If my main results are driven by the interests of these employees, then the reduction in leverage should be more pronounced for firms with higher unionization rates. One caveat with this test is that unionized workers are less likely to have an NCA in their employment contracts than an average worker (Starr et al., 2019).

To test this conjecture, I estimate a regression similar to model (2) but replace $Profit\ Variability_{it}$ with $Union_{jt}$ defined as an industry unionization rate (Hirsch and Macpherson, 2003). The results are presented in Table 11. The coefficient on the triple interaction term between NCI,

[17] The theoretical models proposing that labor market frictions that make unemployment costly for employees affect a firm's optimal capital structure include Titman (1984) and Berk et al. (2010).

Employer Concentration, and Union is positive and statistically significant suggesting that labor cost related mechanisms are unlikely to be behind the main results.

7. Robustness Tests

In this section, I discuss the results from several robustness tests. First, I show that the main results remain similar when using market as opposed to book measures of leverage (Internet Appendix Table 5). Second, my cross-sectional results reported in Section 6 are robust to alternative definitions of the moderating variables (Internet Appendix Tables 6, 7, 8 and 9). Third, I show that the main results are robust to incorporating controls for future profitability (Internet Appendix Table 10). These controls are important given that higher expected future profitability as a result of increased enforceability of NCAs can make a firm either conserve or expand debt capacity and thereby confound my inferences. The former may happen to ensure that the firm can finance good investment projects that may arise in the future (DeAngelo et al., 2011), and the latter may happen to capture the tax benefits of debt financing.

Next, I show that the main results are robust to incorporating controls for future uncertainty (Internet Appendix Table 10). This is to address a concern that there is a jump in general uncertainty unrelated to managerial unemployment risk following increased enforceability of NCAs. Finally, increased trade secrets protection may decrease the firm's incentive to invest in the innovation process given that the firm's competitors are prevented from stealing and using the firm's proprietary knowledge (Conti, 2014). The resulting decrease in a firm's external financing needs may be behind the decrease in leverage. In Internet Appendix Table 11, I show that is not the case given that firms' investment does not change.

8. Conclusion

In this paper, I show that executives choose more conservative capital structures when they face greater unemployment risk due to mobility restrictions. Specifically, I find that following an increase in the

enforceability of non-compete agreements (NCAs), which exogenously increases executives' unemployment risk by limiting their outside options, firms that face high competition in the labor market decrease their leverage. Increased enforceability of NCAs also decreases the proprietary information loss risk for firms. I exploit the incongruence between the location of the firms' headquarters and major operations to empirically distinguish between the two key channels. The results point to the emergence of a risk-related agency conflict stemming from inflexible labor markets.

There are various mechanisms available to the board of directors to mitigate this agency conflict. One is to offer a modified compensation contract. Indeed, Kini et al. (2020) find that following an increase in the enforceability of NCAs, both executives' total compensation and the share of incentive-based compensation increase. Higher total compensation is likely provided by the board to compensate executives for the increased unemployment risk, and the greater share of incentive-based compensation is likely provided to incentivize executives to take on risk. These patterns suggest that the board recognizes the changes in executives' incentives following increased enforceability of NCAs and tries to mitigate the potential negative consequences through a modified compensation contract. The fact that I still document the decrease in leverage points to the failure of the board to optimally change a compensation contract ex-ante following an increase in the enforceability of NCAs.

The debate about the use of NCAs in employment contracts has recently picked up steam in the media, academia, and among policymakers.[18] As put in one *WSJ* article, the debate centers around one side saying that NCAs "are needed to prevent insiders from taking trade secrets, business relationships, or customer data to competing firms when they leave" and the other side saying that NCAs "are having unintended dampening effect on U.S. entrepreneurship, by preventing people from leaving the corporate

[18] See "Resistance to Noncompete Agreements Is a Win for Workers," The Wall Street Journal, May 18, 2019, for an example of coverage in the media. The same article lays out recent legislative changes and proposals. The related academic research has been referenced throughout the paper.

world to launch their own businesses".[19] My findings point to another unintended consequence of increased enforceability of NCAs – the emergence of a risk-related agency conflict.

[19] See "Litigation Over Noncompete Clauses is Rising," *The Wall Street Journal*, August 14, 2013.

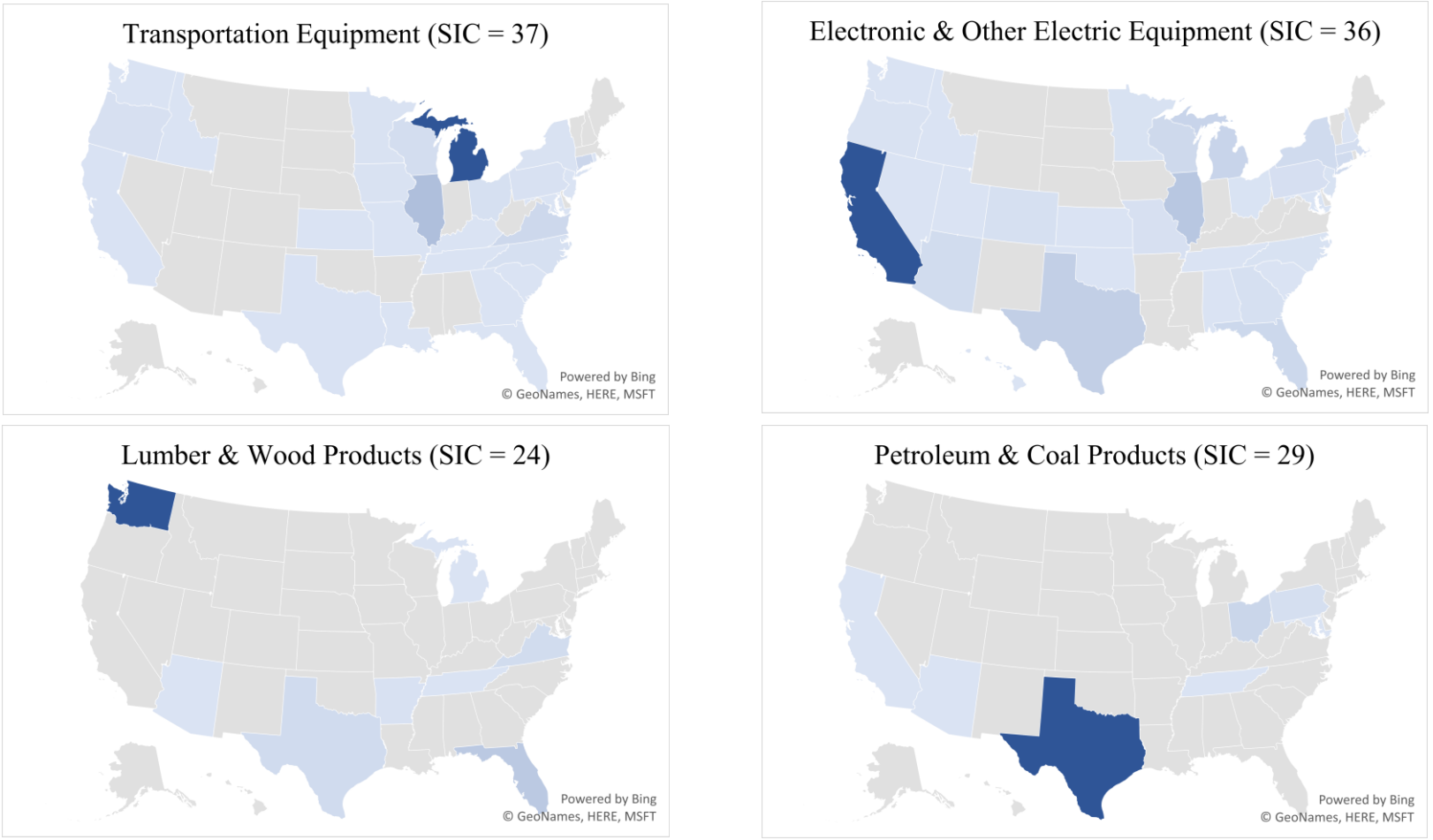
Appendix A

Table A.1. Main Variable Definitions

Variable	Definition (Compustat data items in parentheses)
Net Market Leverage	The book value of long-term debt (*dltt*) plus debt in current liabilities (*dlc*) minus cash (*che*) divided by market value of assets (*prcc_f*csho + at - ceq*)
Net Book Leverage	The book value of long-term debt (*dltt*) plus debt in current liabilities (*dlc*) minus cash (*che*) divided by book value of assets (*at*)
Market Leverage	The book value of long-term debt (*dltt*) plus debt in current liabilities (*dlc*) divided by market value of assets (*prcc_f*csho + at - ceq*)
Book Leverage	The book value of long-term debt (*dltt*) plus debt in current liabilities (*dlc*) divided by book value of assets (*at*)
NCI	The headquarter-state-level non-compete enforceability score. This variable is scaled by 12 in regressions.
Employer Concentration	An indicator variable equal to one if the fraction of total two-digit SIC industry sales (excluding those of the firm itself) generated by in-state competitors (Garmaise, 2011) is greater than the median value for the state, and zero otherwise.
IDD	An indicator variable equal to one if the firm is headquartered in a state whose courts recognize the IDD, and zero otherwise.
Firm Size	The natural logarithm of total assets (*at*)
Market-to-Book	The market value of assets (*prcc_f*csho + at - ceq*) divided by the book value of assets (*at*)
Return on Assets	Operating income before depreciation (*oibdp*) divided by the book value of assets (*at*)
Fixed Assets	The book value of property, plant, and equipment (*ppent*) divided by the book value of assets (*at*)
CF Volatility	The standard deviation of a firm's *Return on Assets* over the previous five years. Firms must have at least three observed Return on Assets over the previous five years to be counted.
Dividend dummy	An indicator variable equal to one if a firm pays common dividends (*dvc*), and zero otherwise.
Log(State Population)	Natural logarithm of the total population in millions in a state.
State Unemployment Rate	State unemployment rate

Appendix B

Figure B.1. Median Values of Competitor Concentration Across U.S. States in 2010 in Selected Industries



This figure plots the median values of *Competitor Concentration* across U.S. states in 2010 across four industries: transportation equipment (top left panel), lumber and wood products (bottom left panel), electronic and other electric equipment (top right panel), and Petroleum and coal products (bottom right panel). Darker colors correspond to higher values of *Competitor Concentration*.

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Table 1. Non-Compete Index (NCI) Changes

State	*Year*	*NCI Change*	*State*	*Year*	*NCI Change*
Colorado	2012	2 to 3	Michigan	1986	0 to 5
Colorado	2014	3 to 2	Montana	1986	1 to 2
Florida	1992	6 to 7	Oregon	2009	6 to 7
Florida	1997	7 to 9	South Carolina	2011	5 to 4
Georgia	2012	5 to 6	Texas	1990	4 to 5
Idaho	2009	6 to 7	Texas	1995	5 to 3
Illinois	2012	5 to 6	Texas	2007	3 to 4
Illinois	2014	6 to 5	Texas	2010	4 to 5
Kentucky	2007	6 to 8	Texas	2012	5 to 6
Louisiana	1990	1 to 4	Virginia	1993	4 to 3
Louisiana	2002	4 to 0	Virginia	2014	3 to 4
Louisiana	2004	0 to 4	Wisconsin	2010	3 to 5
Massachusetts	1983	5 to 6	Wyoming	1994	3 to 4

The data on state-level enforceability of non-compete agreements are from three sources: Bird and Knopf (2015) for the period from 1978 to 1994, Garmaise (2011) for the period from 1994 to 2004, and Kini et al. (2018) for the period from 2005 to 2014. The possible range for the NCI is from zero to twelve, with higher values indicating stricter enforceability. In regressions and summary statistics, NCI is scaled by 12 to ease interpretation.

Table 2. Summary Statistics

Variables	*Mean*	*Std. dev.*	*P25*	*Median*	*P75*	*N*
Net book leverage	0.075	0.385	-0.148	0.108	0.309	132251
Net market leverage	0.081	0.255	-0.069	0.067	0.242	132251
Book leverage	0.248	0.257	0.041	0.200	0.366	132251
Market leverage	0.182	0.183	0.020	0.131	0.290	132251
NCI level	3.833	2.202	3	4	5	132251
Competitor Concentration	0.100	0.160	0.005	0.033	0.121	132193
IDD	0.424	0.494	0	0	1	132251
Book assets	1702	12454	27	112	549	132251
Market to book	2.049	2.035	1.047	1.404	2.162	132251
Return on assets	0.043	0.292	0.025	0.110	0.172	132251
Fixed assets	0.284	0.227	0.103	0.225	0.408	132251
CF volatility	0.108	0.198	0.026	0.049	0.102	132251
Dividend dummy	0.333	0.471	0	0	1	132251
State population	13412	10085	5493	10760	18527	132251
State unemployment rate	0.062	0.019	0.049	0.059	0.073	132251

The sample consists of all firms in the CRSP-Compustat database headquartered in the U.S. Financial firms (SIC codes 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample. All continuous firm-level variables are winsorized at their 1st and 99th percentiles. Missing values reduce the sample to 132,193 firm-year observations and 12,748 firms for the main OLS regressions. Variable definitions are provided in Appendix A.

Table 3. NCAs and Leverage

Variables	(1)	(2)	(3)	(4)
	Net book leverage		Book leverage	
NCI*Employer Concentration	-0.087***	-0.093***	-0.065***	-0.063***
	(0.018)	(0.021)	(0.014)	(0.014)
NCI	0.035	0.056	0.021	0.032
	(0.047)	(0.040)	(0.052)	(0.041)
Employer Concentration	0.034***	0.039***	0.023***	0.024***
	(0.010)	(0.010)	(0.006)	(0.006)
IDD		0.009*		0.010**
		(0.005)		(0.004)
Firm size		0.019***		0.010**
		(0.005)		(0.004)
Market to book		0.001		0.007***
		(0.001)		(0.001)
Return on assets		-0.201***		-0.168***
		(0.014)		(0.012)
Fixed assets		0.661***		0.250***
		(0.045)		(0.018)
CF volatility		0.024		0.075***
		(0.014)		(0.009)
Dividend dummy		-0.057***		-0.046***
		(0.005)		(0.005)
log(State population)		-0.052		-0.030
		(0.051)		(0.044)
State unemployment rate		-0.177		-0.173
		(0.143)		(0.106)
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	132,193	132,193	132,193	132,193
R-squared	0.669	0.702	0.586	0.614

This table presents the results from estimating the regression model (1). The dependent variables are *Net Book Leverage* in columns 1-2 and *Book Leverage* in columns 3-4. The main explanatory variables are the *NCI* (Non-Compete Index), *Employer Concentration*, and their interaction. *NCI* is the headquarter state-level non-compete enforceability score ranging from 0 to 1. *Employer Concentration* is a dummy variable that equals one for firms with above-median values of *Competitor Concentration* (which is defined as the fraction of total industry sales (excluding those of the firm itself) generated by in-state competitors (Garmaise, 2011)) and zero otherwise. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Table 4. NCAs and Leverage: Precedent-Setting Legal Cases

Variables	(1) Net book leverage	(2) Net book leverage	(3) Book leverage	(4) Book leverage
NCI Legal Cases*Employer Concentration	-0.106***	-0.116***	-0.089***	-0.088***
	(0.024)	(0.018)	(0.021)	(0.015)
NCI Legal Cases	0.044	0.020	0.054	0.039
	(0.064)	(0.049)	(0.041)	(0.039)
Employer Concentration	0.039***	0.045***	0.030***	0.031***
	(0.011)	(0.008)	(0.008)	(0.006)
NCI Legal Cases + [NCI Legal Cases*Employer Concentration]		-0.096 (p-value = 0.054)		-0.049 (p-value= 0.164)
Controls?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	132,193	132,193	132,193	132,193
R-squared	0.669	0.703	0.586	0.614

This table presents the results from estimating a variant of the regression model (1). The dependent variables are *Net Book Leverage* in columns 1-2; *Book Leverage* in columns 3-4. The main explanatory variables are the *NCI Legal Cases*, *Employer Concentration*, and their interaction. Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. The joint effect of the double interaction term is reported in the last line of estimates with the p-value for statistical significance as indicated by an F-test for joint significance reported in parentheses below. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Table 5. Falsification Test: Analysis Conducted at the State of Major Operations Level

Variables	(1) Net book leverage	(2) Net book leverage	(3) Book leverage	(4) Book leverage
NCI Alt.*Employer Concentration Alt.	-0.014	-0.011	-0.009	-0.011
	(0.026)	(0.022)	(0.021)	(0.018)
NCI Alt.	-0.034	-0.044	-0.017	-0.028
	(0.064)	(0.043)	(0.051)	(0.039)
Employer Concentration Alt.	0.003	0.002	0.003	0.004
	(0.011)	(0.010)	(0.010)	(0.008)
IDD Alt.	0.003	0.006	0.007*	0.008*
	(0.006)	(0.007)	(0.004)	(0.005)
Controls?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	98,591	98,591	98,591	98,591
R-squared	0.656	0.688	0.562	0.588

This table presents the results from estimating the regression model (1). The dependent variables are *Net Book Leverage* in columns 1-2 and *Book Leverage* in columns 3-4. The main explanatory variables are the *NCI Alt.* (Non-Compete Index), *Employer Concentration Alt.,* and their interaction. *NCI Alt.* is the state of major operations-level non-compete enforceability score ranging from 0 to 1. *Employer Concentration Alt.* is a dummy variable that equals one for firms with above-median values of *Competitor Concentration* (which is defined as the fraction of total industry sales (excluding those of the firm itself) generated by in-state (of major operations) competitors (Garmaise, 2011)) and zero otherwise. *IDD Alt.* is the state of major operations-level IDD indicator variable. Control variables include *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. Standard errors are corrected for heteroskedasticity and clustering at the state of major operations level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Table 6. NCAs, Leverage Decomposition and the Cost of Debt

Variables	(1) log(Book value)	(2) log(Total debt)	(3) Cost of Debt
NCI*Employer Concentration	-0.163	-0.379***	0.027*
	(0.118)	(0.097)	(0.016)
NCI	0.142	0.165	-0.022
	(0.088)	(0.222)	(0.014)
Employer Concentration	0.048	0.152***	-0.007
	(0.052)	(0.046)	(0.007)
Controls?	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes
Observations	132,193	114,190	109,719
R-squared	0.930	0.883	0.300

This table presents the results from estimating an OLS regression model. The dependent variables are the natural logarithms of total book assets (*at*) and total debt (*dlc + dltt*) in columns 1 and 2, respectively, and cost of debt (*xint*/(*dlc + dltt*)) in column 3. Control variables in column 1 include *Return on assets*, *CF volatility*, *Dividend dummy*, *log(State population)*, and *State unemployment rate* complemented by *Firm size*, *Market to book*, and *Fixed assets* in columns 2 and 3. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Table 7. NCAs and Financing Changes

Variables	(1) LT Debt Issuance	(2) LT Debt Reduction	(3) Net Debt Issuance	(4) Sales of Stocks	(5) Repurchases of Stocks	(6) Net Equity Issuance
NCI*Employer Concentration	-0.015	-0.018	0.002	0.024***	-0.007***	0.031***
	(0.022)	(0.021)	(0.006)	(0.007)	(0.003)	(0.008)
NCI	0.004	0.020	-0.016*	-0.021**	-0.001	-0.020*
	(0.020)	(0.018)	(0.008)	(0.009)	(0.005)	(0.012)
Employer Concentration	0.002	0.004	-0.001	-0.010***	0.002**	-0.013***
	(0.006)	(0.006)	(0.002)	(0.003)	(0.001)	(0.003)
Controls?	Yes	Yes	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	127,642	132,193	127,642	129,437	132,193	129,437
R-squared	0.405	0.409	0.183	0.500	0.278	0.503

This table examines the relationship between the enforceability of NCAs and financing changes. The dependent variables are *Long-Term Debt Issuance*, *Long-Term Debt Reduction*, *Net Debt Issuance*, *Sale of Common Stock*, *Repurchases of Common Stock*, and *Net Equity Issuance* in columns 1-6, respectively. Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Table 8. NCAs and Debt Maturity

	(1)	(2)	(3)	(4)	(5)
	Debt due within X years/Book value				
Variables	1 year	2 years	3 years	4 years	5 years
NCI*Employer Concentration	-0.013***	-0.009**	-0.005**	-0.001	-0.000
	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)
NCI	0.013***	0.004	0.001	-0.007	-0.005
	(0.003)	(0.014)	(0.008)	(0.005)	(0.005)
Employer Concentration	0.004***	0.003*	0.003**	-0.000	0.001
	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)
Controls?	Yes	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes	Yes
Observations	130,146	114,172	114,116	114,403	113,011
R-squared	0.369	0.331	0.262	0.248	0.265

This table presents the results from estimating regression model (1), but the dependent variables are near-term debt due within 1 to 5 years in Columns (1)-(5), respectively, scaled by the book value of assets. The main explanatory variables are the *NCI* (Non-Compete Index), *Employer Concentration*, and their interaction. Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Table 9. Cross-Sectional Variation in the Effect of NCI: Profit Variability

Variables	(1)	(2)	(3)	(4)
	Net book leverage		Book leverage	
NCI*Employer Concentration*Profit Variability	-0.081*	-0.091**	-0.071**	-0.085***
	(0.045)	(0.042)	(0.033)	(0.029)
NCI*Employer Concentration	-0.083***	-0.088***	-0.074***	-0.070***
	(0.025)	(0.021)	(0.019)	(0.017)
NCI*Profit Variability	0.082**	0.077**	0.071**	0.071**
	(0.037)	(0.036)	(0.031)	(0.029)
NCI	0.044	0.056	0.032	0.039
	(0.051)	(0.042)	(0.053)	(0.040)
Control variables?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	107,279	107,279	107,279	107,279
R-squared	0.670	0.701	0.605	0.630

This table presents the results from estimating the regression model (2). The dependent variables are *Net Book Leverage* in Columns (1) and (2) and *Book Leverage* in Columns (3) and (4). *Profit Variability* is measured using the standard deviation of the change in earnings before depreciation and amortization, divided by lagged total assets (Matsa, 2010). The ratio is normalized by its standard deviation to ease the interpretation of the estimates and is demeaned (with respect to the mean for the entire sample). Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. *CF Volatility* is omitted as a control variable because it is largely captured by *Profit Variability*. All models include baseline terms and interactions. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Table 10. Cross-Sectional Variation in the Effect of NCI: Financial Constraints (WW Index)

Variables	(1) Net book leverage	(2) Net book leverage	(3) Book leverage	(4) Book leverage
NCI*Employer Concentration*Constrained	-0.064**	-0.049*	-0.053**	-0.045**
	(0.031)	(0.027)	(0.020)	(0.019)
NCI*Employer Concentration	-0.056**	-0.069**	-0.035**	-0.036*
	(0.027)	(0.030)	(0.017)	(0.018)
NCI*Constrained	0.016	0.016	0.018	0.019
	(0.023)	(0.021)	(0.016)	(0.015)
NCI	0.029	0.050	0.007	0.020
	(0.051)	(0.042)	(0.051)	(0.039)
Control variables?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	122,862	122,862	122,862	122,862
R-squared	0.667	0.700	0.594	0.620

This table presents the results from estimating a variant of the regression model (2). The dependent variables are *Net Book Leverage* in Columns (1) and (2) and *Book Leverage* in Columns (3) and (4). *Constrained* is a dummy variable equal to 1 for observations with above sample median value of *WW Index*, and 0 otherwise (Whited and Wu, 2006). Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. All models include baseline terms and interactions. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Table 11. Cross-Sectional Variation in the Effect of NCI: Ind. Unionization Rates

Variables	(1) Net book leverage	(2) Net book leverage	(3) Book leverage	(4) Book leverage
NCI*Employer Concentration*Union	0.261*	0.252**	0.290**	0.273***
	(0.139)	(0.117)	(0.117)	(0.100)
NCI*Employer Concentration	-0.134***	-0.144***	-0.110***	-0.108***
	(0.032)	(0.039)	(0.025)	(0.027)
NCI*Union	-0.037	-0.068	-0.023	0.009
	(0.229)	(0.193)	(0.201)	(0.167)
NCI	0.024	0.047	0.008	0.010
	(0.057)	(0.047)	(0.065)	(0.051)
Control variables?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	119,194	119,194	119,194	119,194
R-squared	0.670	0.704	0.582	0.608

This table presents the results from estimating a variant of the regression model (2). The dependent variables are *Net Book Leverage* in Columns (1) and (2) and *Book Leverage* in Columns (3) and (4). *Union* is an industry unionization rate. Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. All models include baseline terms and interactions. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Internet Appendix for

Non-compete agreements and capital structure decisions

Bektemir Ysmailov

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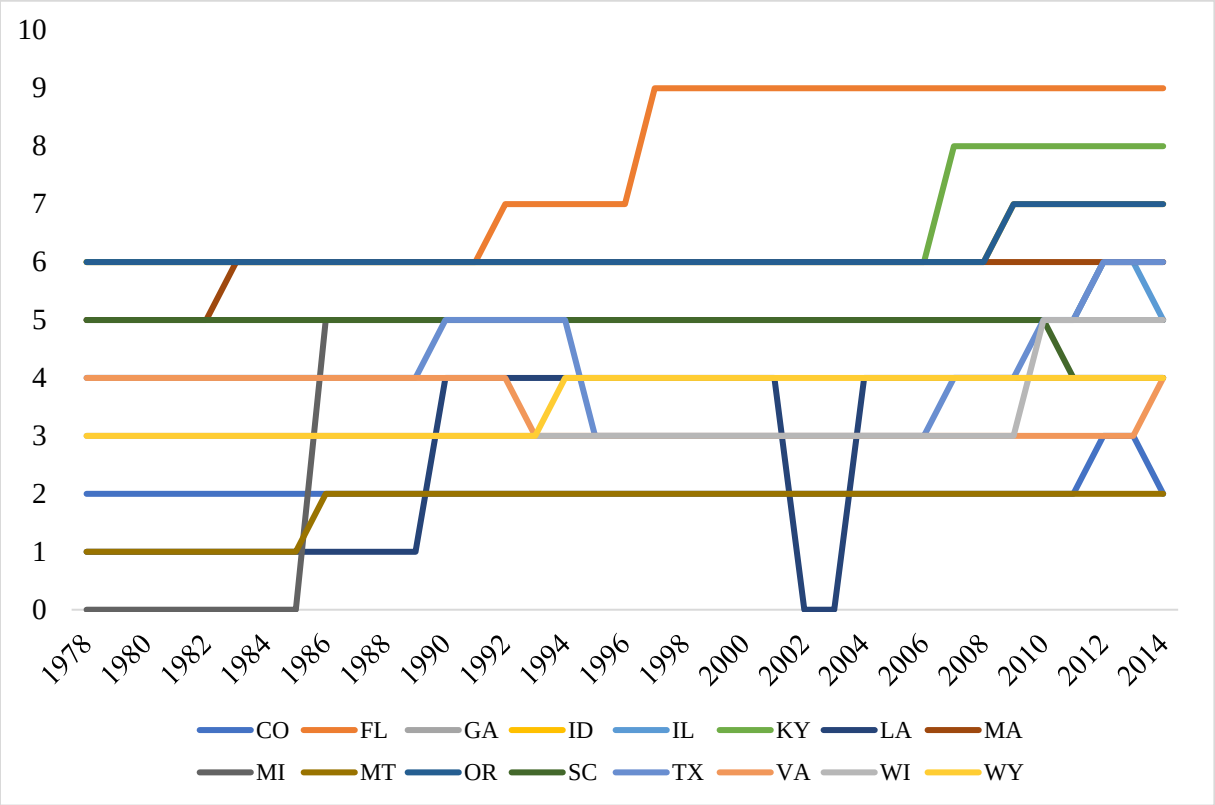
Internet Appendix Figure 1. Graphical Representation of NCI Changes.



Internet Appendix Table 1. NCI Legal Cases Changes

State	Year	Enforceability Change	State	Year	Enforceability Change
Colorado	2012	2 to 3	Michigan	1986	-
Colorado	2014	3 to 2	Montana	1986	-
Florida	1992	-	Oregon	2009	-
Florida	1997	-	South Carolina	2011	5 to 4
Georgia	2012	-	Texas	1990	-
Idaho	2009	-	Texas	1995	*4* to 3
Illinois	2012	5 to 6	Texas	2007	3 to 4
Illinois	2014	6 to 5	Texas	2010	4 to 5
Kentucky	2007	6 to 8	Texas	2012	5 to 6
Louisiana	1990	-	Virginia	1993	4 to 3
Louisiana	2002	*1* to 0	Virginia	2014	3 to 4
Louisiana	2004	0 to 4	Wisconsin	2010	3 to 5
Massachusetts	1983	5 to 6	Wyoming	1994	3 to 4

This table outlines the changes in the non-compete enforceability index that was constructed using court decisions only. In contrast, the NCI used in the main tests is constructed using decisions both by the court and the states' legislatures.

Internet Appendix Table 2. Non-Compete Index and Leverage

	(1)	(2)	(3)	(4)
Variables	Net book leverage		Book leverage	
NCI	-0.012	0.005	-0.014	-0.002
	(0.050)	(0.044)	(0.052)	(0.042)
Controls?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	132,251	132,251	132,251	132,251
R-squared	0.669	0.702	0.586	0.614

This table presents the results from estimating an OLS regression model where the dependent variables are *Net Book Leverage* in columns 1-2 and *Book Leverage* in columns 3-4. The main explanatory variables is *NCI* (Non-Compete Index), which is the headquarter state-level non-compete enforceability score ranging from 0 to 1. Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Internet Appendix Table 3. Employer Concentration and Leverage

	(1)	(2)	(3)	(4)
Variables	Net book leverage		Book leverage	
Employer Concentration	0.006	0.008	0.002	0.003
	(0.008)	(0.008)	(0.006)	(0.006)
Controls?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	132,193	132,193	132,193	132,193
R-squared	0.669	0.702	0.586	0.614

This table presents the results from estimating an OLS regression model where the dependent variables are *Net Book Leverage* in columns 1-2 and *Book Leverage* in columns 3-4. The main explanatory variables is *Employer Concentration*, which is a dummy variable that equals one for firms with above-median values of *Competitor Concentration* (which is defined as the fraction of total industry sales (excluding those of the firm itself) generated by in-state competitors (Garmaise, 2011)) and zero otherwise. Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Internet Appendix Table 4. NCI, Competitor Concentration and Leverage

	(1)	(2)	(3)	(4)
Variables	Net book leverage		Book leverage	
NCI*Competitor Concentration	-0.004	-0.108	0.000	-0.042
	(0.085)	(0.069)	(0.080)	(0.073)
NCI	-0.012	0.023	-0.015	0.004
	(0.047)	(0.039)	(0.051)	(0.039)
Competitor Concentration	-0.000	0.037	0.015	0.040
	(0.030)	(0.028)	(0.032)	(0.034)
Controls?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	132,193	132,193	132,193	132,193
R-squared	0.669	0.702	0.586	0.614

This table presents the results from estimating an OLS regression model where the dependent variables are *Net Book Leverage* in columns 1-2 and *Book Leverage* in columns 3-4. The main explanatory variables is *Competitor* Concentration, which is defined as the fraction of total industry sales (excluding those of the firm itself) generated by in-state competitors (Garmaise, 2011), and zero otherwise. Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Internet Appendix Table 5. Enforceability of NCAs and Capital Structure: Market Measures of Leverage

Variables	(1)	(2)	(3)	(4)
	Net market leverage		Market leverage	
NCI*Employer Concentration	-0.023	-0.026*	-0.015	-0.015
	(0.018)	(0.015)	(0.013)	(0.010)
NCI	0.008	0.030	0.004	0.023
	(0.038)	(0.037)	(0.035)	(0.033)
Employer Concentration	0.014	0.017*	0.008	0.009
	(0.011)	(0.009)	(0.007)	(0.006)
Controls?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	132,193	132,193	132,193	132,193
R-squared	0.662	0.695	0.649	0.686

This table presents the results from estimating the regression model (1). The dependent variables are *Net Market Leverage* in Columns (1) and (2) and *Market Leverage* in Columns (3) and (4). The main explanatory variables are the *NCI* (Non-Compete Index), *Employer Concentration,* and their interaction. Control variables include *IDD, Firm Size, Market to book, Return on assets, Fixed Assets, CF Volatility, Dividend dummy, log(State population),* and *State Unemployment Rate*. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Internet Appendix Table 6. Cross-Sectional Variation in the Effect of NCI: Profit Level Variability

Variables	(1)	(2)	(3)	(4)
	Net book leverage		Book leverage	
NCI*Employer Concentration*Profit Level Variability	-0.065	-0.069*	-0.056*	-0.068**
	(0.043)	(0.039)	(0.030)	(0.026)
NCI*Employer Concentration	-0.083***	-0.089***	-0.074***	-0.070***
	(0.025)	(0.021)	(0.019)	(0.016)
NCI*Profit Level Variability	0.054	0.045	0.049	0.048
	(0.040)	(0.039)	(0.034)	(0.031)
NCI	0.043	0.054	0.032	0.039
	(0.049)	(0.040)	(0.051)	(0.038)
Controls?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	107,557	107,557	107,557	107,557
R-squared	0.670	0.700	0.605	0.629

This table presents the results from estimating the regression model (2). The dependent variables are *Net Book Leverage* in Columns (1) and (2) and *Book Leverage* in Columns (3) and (4). *Profit Level Variability* is measured using the standard deviation of the *level* of earnings before depreciation and amortization, divided by lagged total assets (Matsa, 2010). The ratio is normalized by its standard deviation to ease the interpretation of the estimates and is demeaned (with respect to the mean for the entire sample). Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. *CF Volatility* is omitted as a control variable because it is largely captured by *Profit Level Variability*. All models include baseline terms and interactions. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Internet Appendix Table 7. Cross-Sectional Variation in the Effect of NCI: Sales Variability

Variables	(1) Net book leverage	(2) Net book leverage	(3) Book leverage	(4) Book leverage
NCI*Employer Concentration*Sales Variability	-0.029	-0.030	-0.034**	-0.037***
	(0.022)	(0.020)	(0.013)	(0.013)
NCI*Employer Concentration	-0.084***	-0.089***	-0.074***	-0.070***
	(0.025)	(0.022)	(0.020)	(0.017)
NCI*Sales variability	0.033*	0.032*	0.033***	0.033***
	(0.018)	(0.018)	(0.012)	(0.012)
NCI	0.043	0.056	0.032	0.040
	(0.046)	(0.039)	(0.049)	(0.036)
Controls?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	107,399	107,399	107,399	107,399
R-squared	0.670	0.700	0.604	0.630

This table presents the results from estimating the regression model (2). The dependent variables are *Net Book Leverage* in Columns (1) and (2) and *Book Leverage* in Columns (3) and (4). *Sales Variability* is measured using the standard deviation of the change in sales, divided by lagged total assets (Matsa, 2010). The ratio is normalized by its standard deviation to ease the interpretation of the estimates and is demeaned (with respect to the mean for the entire sample). Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. *CF Volatility* is omitted as a control variable because it is largely captured by *Sales Variability*. All models include baseline terms and interactions. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Internet Appendix Table 8. Cross-Sectional Variation in the Effect of NCI: Altman Z-score

Variables	(1) Net book leverage	(2) Net book leverage	(3) Book leverage	(4) Book leverage
NCI*Employer Concentration*Distressed	-0.065**	-0.042	-0.031*	-0.017
	(0.030)	(0.026)	(0.018)	(0.016)
NCI*Employer Concentration	-0.072***	-0.085***	-0.066***	-0.069***
	(0.022)	(0.029)	(0.015)	(0.019)
NCI*Distressed	0.011	0.020	0.019	0.023
	(0.026)	(0.026)	(0.019)	(0.018)
NCI	0.025	0.031	0.009	0.014
	(0.046)	(0.042)	(0.051)	(0.042)
Control variables?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	127,765	127,765	127,765	127,765
R-squared	0.670	0.702	0.583	0.609

This table presents the results from estimating a variant of the regression model (2). The dependent variables are *Net Book Leverage* in Columns (1) and (2) and *Book Leverage* in Columns (3) and (4). *Distressed* is a dummy variable equal to 1 for observations with above sample median value of *Altman Z-Score*, and 0 otherwise. Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. All models include baseline terms and interactions. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Internet Appendix Table 9. Cross-Sectional Variation in the Effect of NCI: Financial Constraints (SA Index)

Variables	(1) Net book leverage	(2) Net book leverage	(3) Book leverage	(4) Book leverage
NCI*Employer Concentration*Constrained	-0.118**	-0.071*	-0.083**	-0.058*
	(0.048)	(0.038)	(0.036)	(0.030)
NCI*Employer Concentration	-0.039	-0.067***	-0.031	-0.040**
	(0.028)	(0.025)	(0.020)	(0.017)
NCI*Constrained	0.069	0.047	0.053	0.046
	(0.041)	(0.037)	(0.032)	(0.028)
NCI	0.006	0.040	0.001	0.016
	(0.053)	(0.041)	(0.053)	(0.040)
Controls?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	132,193	132,193	132,193	132,193
R-squared	0.670	0.703	0.586	0.613

This table presents the results from estimating a variant of the regression model (2). The dependent variables are *Net Book Leverage* in Columns (1) and (2) and *Book Leverage* in Columns (3) and (4). *Constrained* is a dummy variable equal to 1 for observations with above sample median value of *SA Index*, and 0 otherwise (Hadlock and Pierce, 2010). Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. All models include baseline terms and interactions. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Internet Appendix Table 10. NCI and Leverage: Controlling for Profitability and General Uncertainty

Variables	(1)	(2)	(3)	(4)
	Net book leverage		Book leverage	
NCI*Employer Concentration	-0.110***	-0.103***	-0.073***	-0.068***
	(0.021)	(0.020)	(0.014)	(0.014)
NCI	0.077	0.070	0.046	0.041
	(0.050)	(0.050)	(0.046)	(0.047)
Employer Concentration	0.044***	0.042***	0.028***	0.026***
	(0.011)	(0.011)	(0.007)	(0.007)
Return on assets	-0.236***	-0.187***	-0.182***	-0.157***
	(0.015)	(0.016)	(0.013)	(0.013)
Return on $assets_{t+1}$	0.078***		0.032***	
	(0.007)		(0.006)	
Return on $assets_{t+2}$	0.061***		0.029***	
	(0.007)		(0.006)	
CF volatility	0.018	-0.003	0.074***	0.040***
	(0.015)	(0.015)	(0.011)	(0.012)
CF $volatility_{t+1}$		0.007		0.017
		(0.012)		(0.012)
CF $volatility_{t+2}$		0.029*		0.046***
		(0.016)		(0.014)
Controls?	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	108,059	108,945	108,059	108,945
R-squared	0.715	0.710	0.622	0.618

This table presents the results from estimating the regression model (1) with additional controls. The dependent variables are *Net Book Leverage* in Columns (1) and (2) and *Book Leverage* in Columns (3) and (4). Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Internet Appendix Table 11. NCAs and Investment

Variables	(1) R&D/Assets	(2) (R&D + Capex)/Assets	(3) (R&D + Capex + Ad)/Assets
NCI*Employer Concentration	-0.011	-0.002	0.001
	(0.007)	(0.007)	(0.007)
NCI	0.008	-0.004	-0.010
	(0.010)	(0.019)	(0.024)
Employer concentration	0.005	0.001	-0.001
	(0.003)	(0.003)	(0.002)
Controls?	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes
Observations	132,193	130,842	130,842
R-squared	0.814	0.720	0.717

This table presents the results from estimating an OLS regression of investment on *NCI*, *Employer Concentration*, and their interaction. The dependent variables are *R&D, (R&D + Capex*), and *(R&D + Capex + Ad)*, all scaled by total book assets in columns 1-3, respectively. Control variables include *IDD*, *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.

Internet Appendix Table 12. NCI Changes: Cases & Laws

State	Case	Year
Massachusetts	*Sentry Ins. V. Firnstein*	1982
Michigan	Michigan Legislature	1985
Montana	Montana Legislature	1985
Louisiana	Louisiana Legislature	1989
Texas	Texas Legislature	1989
Florida	Florida Legislature	1991
Virginia	*Clinch Valley Physicians, Inc. v. Garcia*	1992
Wyoming	*Hopper v. All Pet Animal Clinic, Inc.*	1993
Texas	*Light v. Centel Cellular Co.*	1994
Florida	Florida Legislature	1996
Louisiana	*SWAT 24 Shreveport Bossier, Inc. v. Bond*	2001
Kentucky	*Gardner Denver Drum LLC v. Peter Goodier and Tuthill Vacuum and Blower Systems*	2006
Texas	*Baker Petrolite Corp. v. Spicer*	2006
Idaho	Idaho Legislature	2008
Oregon	Oregon Legislature	2008
Texas	*Mann Frankfort Stein & Lipp Advisors, Inc. v. Fielding*	2009
Wisconsin	*Star Direct, Inc. v. Dal Pra.*	2009
South Carolina	*Poynter Investments, Inc. v. Century Builders of Piedmont, Inc.*	2010
Colorado	*Lucht's Concrete Pumping, Inc. v. Horner*	2011
Georgia	Georgia Legislature	2011
Illinois	*Fire Equipment v. Arredondo et al. (2011)*	2011
Texas	*Marsh USA, Inc. v. Cook*	2011
Illinois	*Fifield v. Premier Dealership Servs.*	2013
Virginia	*Assurance Data Inc. v. Malyevac*	2013
Colorado	Kini et al. (2020)	2013

This table lists the cases and laws that led to changes in the state-level non-compete index.

Internet Appendix Table 13. Enforceability of NCAs and Capital Structure: Restricted Sample

Variables	(1) Net book leverage	(2) Net book leverage	(3) Book leverage	(4) Book leverage
NCI*Employer Concentration	-0.096***	-0.100***	-0.076***	-0.071***
	(0.020)	(0.025)	(0.016)	(0.018)
NCI	0.035	0.061	0.028	0.037
	(0.062)	(0.052)	(0.065)	(0.052)
Employer Concentration	0.039***	0.044***	0.029***	0.029***
	(0.011)	(0.011)	(0.007)	(0.007)
IDD		0.011*		0.011**
		(0.006)		(0.004)
Controls?	No	Yes	No	Yes
Year FE?	Yes	Yes	Yes	Yes
Firm FE?	Yes	Yes	Yes	Yes
Observations	98,582	98,582	98,582	98,582
R-squared	0.656	0.688	0.562	0.588

This table presents the results from estimating the regression model (1). The dependent variables are *Net Book Leverage* in columns 1-2 and *Book Leverage* in columns 3-4. The main explanatory variables are the *NCI* (Non-Compete Index), *Employer Concentration*, and their interaction. Control variables include *Firm Size*, *Market to book*, *Return on assets*, *Fixed Assets*, *CF Volatility*, *Dividend dummy*, *log(State population)*, and *State Unemployment Rate*. Compared to the main sample, the sample in this table is restricted to firms in the SEC's online database in the period from 1994 to 2008. Standard errors are corrected for heteroskedasticity and clustering at the state of HQ level. Variable definitions are provided in Appendix A. Note: *** p<0.01, ** p<0.05, * p<0.1.