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# Trade Secrets Protection and Antitakeover Provisions

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## Abstract

We examine whether and why managers strengthen antitakeover provisions when facing an increased threat of being acquired. Our tests exploit the Inevitable Disclosure Doctrine (IDD), which exogenously decreases knowledge-worker mobility, thereby increasing firms' likelihood of being acquired. Managers respond by increasing specific antitakeover provisions, especially when employees have greater ex-ante mobility. Firms that strengthen antitakeovers experience a reduced takeover likelihood. Cross-sectional tests indicate that firms with higher innovative activity increase antitakeovers more after IDD, and those that do, experience greater ex-post innovation outcomes. Our results are consistent with managers increasing antitakeovers to protect long-term innovation output rather than for private benefits.

**Keywords:** Inevitable Disclosure Doctrine, antitakeover provisions, takeover likelihood, innovation, trade secrets.

**JEL Classification Number:** G34, G38, K22, L14

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# 1 Introduction

The effect of antitakeover provisions (ATPs) on various aspects of market, firm, and managerial behavior has generated considerable attention over the past two decades (Comment and Schwert, 1995; Gompers et al., 2003; Bertrand and Mullainathan, 2003). Yet, no consensus has emerged on how ATPs affect shareholder wealth and the probability of being acquired (Stráska and Waller, 2014).<sup>1</sup> Considerable uncertainty also remains on which ATPs are effective in deterring takeovers and how managers might alter existing levels of ATPs in response to elevated takeover threats (Klausner, 2013; Catan and Kahan, 2016).

We present new evidence on this debate by examining managerial response to a plausibly exogenous increase in the threat of takeovers. Our study utilizes the staggered adoption of the Inevitable Disclosure Doctrine (IDD) by U.S. state courts, which serves to protect a firm’s trade secrets.<sup>2</sup> We first confirm that IDD increases the probability of being acquired due to factors described below. We then examine whether and which specific ATPs managers alter when faced with an elevated takeover threat due to IDD. Next, we study the efficacy of ATPs by correlating variation in ATPs with a change in the likelihood of takeovers after IDD. Finally, we investigate whether managerial response by altering ATPs is consistent with shareholder value maximization versus preservation of private benefits in this setting.

The adoption of the IDD by U.S. state courts prevents employees who have knowledge of the firm’s trade secrets from working for a rival firm if employment would inevitably lead to divulging trade secrets. The restriction applies to both in-state and out-of-state rivals, and to employees with and without non-disclosure or non-compete agreements. Thus, IDD recognition significantly reduces the mobility of knowledge workers in these states.

Under IDD, labor mobility restrictions can increase takeover risk for two reasons. First, IDD precludes competitors from luring away employees in order to access trade secrets or skilled human capital. This restriction increases the possibility that competitors will pursue other means of

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<sup>1</sup>The lack of resolution and mixed results in the literature are also likely to be due to the endogenous nature of ATPs. However, it is also possible that the findings are mixed because the benefits of ATPs vary across firms and the circumstances of their use (Stráska and Waller, 2014; Johnson et al., 2015).

<sup>2</sup>Trade secrets include all types of sensitive information (e.g., formulas, processes, product designs, financial information, and customer information) that provide a firm with competitive advantage over its rivals. See Glaeser (2018) for a comprehensive description.

obtaining these intellectual properties, such as acquiring the firm (Tate and Yang, 2016). Consistent with this notion, we find anecdotal evidence that firms often reference human capital and knowledge workers as a motivating factor for acquisitions.<sup>3</sup> Second, because IDD lowers the risk that employees will leave and transfer proprietary knowledge to a firm’s competitors, managers might increase investment in their organizational capital.<sup>4</sup> Potential increases in organizational capital, as well as reductions in the mobility of knowledge workers, makes a firm in an IDD state more attractive to its competitors, thus adding to its likelihood of being a takeover target. Indeed, Chen et al. (2018) find that the probability of being acquired increases for firms headquartered in states that recognize IDD versus those that do not. We test and confirm that takeover probability is elevated for firms in IDD states during our sample period.<sup>5</sup>

IDD provides us with an appealing setting to examine managerial response for two reasons. First, the staggered adoption of the IDD by U.S. states allows us to identify a causal effect of increased takeover threat on the use of ATPs in a difference-in-difference framework. Second, state courts adopted IDD solely to protect trade secrets of a firm in their jurisdiction and did not intend to promote takeover activity or induce changes in firms’ governance structures.<sup>6</sup> Thus, any potential effects on these factors are likely to be unintended consequences of court decisions.

We ask whether managers increase ATPs to combat this elevated takeover threat after IDD. To answer this question, we obtain data on firm-level ATPs from Institutional Shareholder Services (ISS). Calling upon extant literature, we posit that among the 24 ATPs in ISS, 11 are directly related to strategies firms might employ to deter takeover attempts. These provisions make the target less attractive to the acquirer (poison pills, pension parachutes), the acquisition more expensive (fair price, silver parachutes), or make it harder, longer, or costlier for the acquirer to gain control over

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<sup>3</sup>As an illustration, Mark Zuckerberg of Facebook has stated, “Facebook has not once bought a company for the company itself. We buy companies to get excellent people.” See Nate Hindman, Huffington Post, May 25, 2011, [http://www.huffingtonpost.com/2010/10/19/mark-zuckerberg-we-buy-co\\_n\\_767338.html](http://www.huffingtonpost.com/2010/10/19/mark-zuckerberg-we-buy-co_n_767338.html). Numerous examples of acquisitions for talent exist in industries with higher proportions of knowledge capital. See Miguel Helft, New York Times, May 17, 2011, <https://www.nytimes.com/2011/05/18/technology/18talent.html>.

<sup>4</sup>Organizational capital is defined as the body of knowledge and business processes and systems leading to competitive edge and operational efficiency (Li et al., 2018).

<sup>5</sup>We recognize that firms are likely to undertake a cost-benefit assessment of whether acquisitions are the most effective way to obtain talent post-IDD versus other alternatives. While this approach is costly for firms, both anecdotal and empirical evidence by Chen et al. (2018) suggest that firms do acquire other companies to acquire talent. We replicate the findings in Chen et al. (2018) for our sample period in the Internet Appendix.

<sup>6</sup>In addition, Klasa et al. (2018) report that none of the following affect the decision of state courts to adopt IDD: economic or political conditions, worker characteristics, labor laws, and adoption of the Uniform Trade Secrets Act (UTSA).

the target (directors’ duties, unequal voting, supermajority, written consent, special meeting, blank check and classified boards). We collectively refer to this group of ATPs as “Takeover Defenses” and expect managers to increase this group of provisions after IDD.

We find that firms headquartered in states adopting IDD significantly increase Takeover Defenses as compared to firms in states that did not adopt IDD.<sup>7</sup> Examining a time trend of the changes in the years before and after IDD recognition indicates that significant changes in the Takeover Defenses take place in years just after IDD adoption. Cross-sectional tests reveal that the treatment effect on Takeover Defenses is stronger for firms with greater ex-ante employee mobility, proxied by the number of firms in the same industry and headquarter state prior to IDD adoption (Chen et al., 2018) and for firms in states with lower enforcement of covenants not to compete (Bird and Knopf, 2015).

Among the Takeover Defenses, we find significant increases in seven provisions after IDD: written consent, classified boards, blank check, directors’ duties, silver parachutes, pension parachutes, and unequal voting. We also find that increases in these provisions are associated with a reduced likelihood of being acquired over the period of one to five years after IDD. This result suggests that strengthening Takeover Defenses is effective in reducing takeover risk.

Given that managers increase Takeover Defenses following IDD, and these increases are associated with a lower likelihood of being acquired, we next investigate whether managerial actions are driven by value-increasing versus value-decreasing intentions. One motive for increasing Takeover Defenses is to protect long-term investment incentives. An elevated threat of being acquired reduces managerial incentives to devote effort and human capital in long-term and hard-to-value investments, such as research and development (R&D) (Stein, 1988; Shleifer and Summers, 1988). By increasing their defenses against takeovers, firms reduce the incentive for managers to make myopic decisions, such as boosting near-term earnings at the detriment of long-term investments (Stein, 1988). A premature takeover for firms with substantial trade secrets could reduce long-term shareholder wealth by selling the firm before the upside of innovative investments are realized at a later date.<sup>8</sup> Another motive for increasing Takeover Defenses in the face of

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<sup>7</sup>Our results are robust to employing an entropy-balanced sample where we balance the first three moments (mean, variance and skewness) of the treatment (IDD) and control (non-IDD) firms following Hainmueller (2012).

<sup>8</sup>Consistent with this notion, Facebook rejected a \$1 billion early offer to acquire Facebook in 2006. Facebook’s CEO claimed justified the rejection by claiming that the bidder, Yahoo, undervalued investments in future products. See Mike Hoefflinger, Business Insider, Apr. 16, 2017, <https://www.businessinsider.com/>

elevated takeover threat is to increase bargaining power. In this case, the goal is to maximize expected takeover premiums if the firm receives a bid (DeAngelo and Rice, 1983; Zingales, 1995; Comment and Schwert, 1995).

Alternatively, managers might want to increase Takeover Defenses to protect private benefits by further entrenching themselves at the cost of shareholders. Consistent with this notion, many papers argue that ATPs can reduce firm value by increasing agency costs and shielding managers from the market for corporate control (Gompers et al., 2003; Bebchuk et al., 2008). Empirical evidence shows that takeovers often result in the replacement of target management and directors (Li, 2013). Responding to IDD by increasing Takeover Defenses could be motivated by managers' and directors' desires to preserve their jobs, even when a takeover could enhance value for shareholders. Thus, entrenched managers might increase Takeover Defenses after IDD due to self-serving interests rather than protection of shareholder value (e.g., Bertrand and Mullainathan, 2003).

In order to tease out these alternative motivations behind managers' decisions, we conduct several cross-sectional analyses. Our evidence points to shareholder value maximizing intentions for strengthening Takeover Defenses. We find that firms with greater innovative activity as proxied by more knowledge workers and higher levels of R&D and intangible assets as a percentage of total assets are more likely to increase Takeover Defenses after IDD recognition. Thus, we posit that these firms are increasing Takeover Defenses to protect long-term investment incentives. We also find suggestive evidence that firms increasing Takeover Defenses after IDD obtain marginally larger takeover premiums in the event that they are subsequently acquired.

In contrast, we find no difference in the change in Takeover Defenses for firms with varying levels of managerial entrenchment, proxied by CEO tenure, the lack of a blockholder, and low CEO pay-performance sensitivity. Taken together, these findings support the notion that firms where innovation and new product development are key will protect their long-term investments by instituting provisions that discourage takeover attempts. It also implies that in this setting, managers upward adjusted Takeover Defenses for value-increasing, not value-destroying, purposes.

To provide further insight into the shareholder value implications of increasing Takeover Defenses, we compare the long-run innovation output of IDD firms based on their decision to alter these ATPs. Using measures of patent activity from Kogan et al. (2017), we find that

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[why-mark-zuckerberg-turned-down-yahoos-1-billion-offer-to-buy-facebook-in-2006-2017-4](#).

firms increasing these provisions have both a greater number and higher quality of patents in years just following IDD, as compared to firms that did not increase these provisions. Moreover, firms increasing Takeover Defenses after IDD reference a greater number of trade secrets in their annual reports during the first few years following IDD.<sup>9</sup> Similar to the cross-sectional results, these findings are consistent with value maximizing reasons for increasing Takeover Defenses after IDD and provide suggestive evidence that firms experience greater innovative output when they protect their long-term investments via strengthened Takeover Defenses (Becker-Blease, 2011).

Our study faces the following challenge. As in any difference-in-difference setup, our conclusions rely on the assumption that any differences in firms' ATPs after the legal adoption of IDD are due to this event and, absent this change, the pre-treatment trends would continue. To this end, we provide tests that are consistent with the parallel trends assumption in the level of Takeover Defenses. However, it is still possible that omitted variables correlated with both the adoption of IDD and post-treatment Takeover Defenses that are driving our results, thus confounding our interpretations. Given the stickiness of ATPs (Field and Karpoff, 2002), this result seems unlikely. Nevertheless, we mitigate this concern by including standard controls used in models on ATPs and takeover activity, firm fixed effects to control for time-invariant firm-level factors, and year fixed effects to control for any time trends.<sup>10</sup> We also include controls for the economic and political conditions prevailing in a state as in Klasa et al. (2018), state-level enforcement of covenants not to compete (Bird and Knopf, 2015), and CEO ownership based on the recommendation in Catan and Kahan (2016).

Subject to the above caveat, our study offers the following contributions. We add to the literature examining the relation between managerial use of ATPs and takeover activity (e.g., Comment and Schwert, 1995; Sokolyk, 2011; Karpoff et al., 2017; Cain et al., 2017). Unlike most of the literature, we document a potential causal link between an increased takeover threat and managerial use of ATPs. We complement existing studies by providing evidence on the specific ATPs managers choose to employ in the face of an increased takeover threat following IDD, and

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<sup>9</sup>Since trade secrets are unobservable, we follow Glaeser (2018) in counting of the number of times a firm mentions "trade secret" or "trade secrecy" in its annual SEC Form 10-K filing. The notion is that firms referencing trade secrets more frequently in their annual reports are likely to have more trade secrets. This approach surely introduces measurement error, but there is no reason to believe the error is systematically biased towards firms with changes in takeover defenses. Nevertheless, we interpret these results with caution.

<sup>10</sup>Repeating our analyses using firm and industry-year fixed effects yields similar results. We do not employ these in our main specification because several controls already capture industry-level variations (e.g., R&D).



provide evidence that these ATPs are associated with lower takeover likelihoods.

Next, we add to the literature on the impact of ATPs on shareholder value (e.g., Gompers et al., 2003; Bates et al., 2008). Our evidence suggests that firms engaging in more innovative activity (i.e., those with greater proportion of knowledge workers, and high R&D expenses and intangible assets) are more likely to increase certain ATPs, and firms that increase ATPs are associated with greater long-run quantity and quality of innovation via patents and trade secrets. Thus, we document a setting where managers upward adjust their ATP levels for motives consistent with protecting or enhancing shareholder value, rather than for motives driven by managerial entrenchment.

Relatedly, our study speaks to the literature examining the relation between ATPs and innovation activity (Bertrand and Mullainathan, 2003; Becker-Blease, 2011; Atanassov, 2013). For instance, Atanassov (2013) provides evidence that patent activity declines after certain state law ATPs increase, and Bertrand and Mullainathan (2003) find that when managers are insulated from takeovers, white-collar wages increase and managers prefer to enjoy the quiet life. In contrast, Becker-Blease (2011) finds a positive correlation between ATPs and patent activity. We exploit a setting where we can observe managers' responses in terms of firm-level ATPs to a plausibly exogenous shock to takeover threats, and how that choice is associated with subsequent innovation output via patents and trade secrets. Using exogenous variation in takeover threats also helps us circumvent some of the challenges that other studies face as discussed in Catan and Kahan (2016).

Finally, we contribute to the studies that demonstrate various real effects of state adoptions of the IDD (e.g., Ali et al., 2018; Contigiani et al., 2018; Chen et al., 2018; Klasa et al., 2018; Li et al., 2018). In particular, we complement the results in Contigiani et al. (2018), who show that, on average, innovation declines post-IDD for firms in a single state. Considering a broader set of states that adopt IDD versus those that do not, we find that managers of firms in IDD states that increase Takeover Defenses experience higher innovative output in the period after IDD.

## **2 The Inevitable Disclosure Doctrine**

A trade secret comprises “any information, including a formula, pattern, compilation, program device, method, technique, or process, that: (i) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means

by, other persons who can obtain economic value from its disclosure or use, and (ii) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy” (UTSA, 1985). The UTSA also describes “misappropriation” of trade secrets to mean the acquisition of a trade secret by another person (including a corporation, government or any legal or commercial entity) who knows or has reason to know that the trade secret was acquired by improper means. Misappropriation may also arise through the disclosure or use of a trade secret by a person who acquired it under circumstances giving rise to a duty to maintain its secrecy or limit its use.

The IDD helps with the legal protection of trade secrets of a firm by allowing state courts to restrict the mobility of employees who possess such secrets to join different rival companies, or start their own rival company, and thus preventing them from disclosing these secrets in their new work environment. The legal doctrine in the IDD is based on the concept of *threatened* misappropriation. Essentially, IDD maintains that, if the new employment would inevitably lead to the disclosure of the firm’s trade secrets to a competitor and therefore cause the firm irreparable harm, then state courts can prevent the employee from working for the firm’s rival or can allow it conditional that the employee assume limited responsibilities in the rival firm.

There are other means of preventing such transfer of knowledge, such as having employment contracts with a non-disclosure agreement (NDA) and/or a covenant not to compete (CNC). Klasa et al. (2018) discuss these and the differences of alternative contracts from the IDD and other nuances of IDD in detail. Briefly, IDD provides significant additional protection of a firm’s trade secrets because it does not entail specific geographic restrictions (such as in NDAs or CNCs) and it allows state courts to prohibit an individual’s employment at a competitor firm if this could lead to a future violation of an NDA (i.e., it does not need the violation to actually occur). A firm can rely on establishing the following facts to obtain an injunction: (i) the employee in question has access to its trade secrets, (ii) the employee’s duties at the rival firm would be so similar that in performing them he or she will inevitably use or disclose the trade secrets, and (iii) the disclosure of the trade secrets would produce irreparable economic harm to its business.

The IDD provides an ideal setting for us to examine the effect of an increased threat of takeovers due to the restriction of employee mobility on firms’ antitakeover policies.<sup>11</sup> It also provides an

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<sup>11</sup>Klasa et al. (2018) use data from the Census Bureau’s Survey of Income and Program Participation to provide evidence that the recognition of the IDD in a firm’s state significantly reduces the mobility of a firm’s workers who know its secrets to rival firms.

attractive setting for cleaner identification, because the court’s positions regarding adoption of IDD over time provides an exogenous source of variation in the protection of firms’ trade secrets, particularly in the context of firms’ ATPs.<sup>12</sup> As argued in Klasa et al. (2018), precedent-setting state courts’ adoption of IDD are based on striking a balance between protecting firms’ trade secrets and public policy concerns related to employee freedom of employment (Harris, 2000; Godfrey, 2004). State courts were not considering firms’ ATPs in making these decisions. In addition, the state court judges are deemed independent from the state and federal governments. Their decisions are not influenced by the lobbying actions of labor unions, corporations or any political parties, but based primarily on the merits of specific cases (Klasa et al., 2018; Chen et al., 2018). Finally, corporations were unlikely to anticipate IDD decisions because a court’s issuance of a precedent is idiosyncratic to a particular case. Therefore, it is unlikely that IDD decisions are prompted by factors that drive firms’ decisions regarding their takeover provisions.

### 3 Empirical predictions

In this section, we first develop a conceptual framework for which ATPs managers might increase following IDD. Next, we develop cross-sectional predictions as to what types of firms are more likely to increase these provisions and their consequences for long-run innovation outcomes.

#### 3.1 Antitakeover provisions and IDD

We posit that managers who want to respond to elevated takeover risk are likely to increase provisions that delay unsolicited takeovers and render the firm less attractive or more difficult or expensive to acquire. Among the firm-level ATPs, we consider the following provisions to be related to delaying takeovers: classified board, supermajority, blank check, limits to special meeting, limits to written consent, unequal voting, director duties, fair price, poison pills, pension parachute and silver parachute. Each of these provisions involve tactics that slow down acquirers.

Several of these provisions (classified boards, supermajority, blank check, limits to special meetings and written consent, unequal voting, and directors’ duties) make it harder, lengthier, and

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<sup>12</sup>Several studies have till date utilized this setting to examine the effect of this shock to the protection of trade secrets to various corporate outcomes, such as the likelihood of takeovers (Chen et al., 2018), leverage (Klasa et al., 2018), and disclosures (Ali et al., 2018; Li et al., 2018).

costlier for the acquirer to gain control over the target. Poison pills and pension parachutes make the target less attractive to the acquirer by diluting the acquirers voting power and by preventing an acquirer from using the target's surplus cash in pension funds. Fair price and silver parachutes could make an acquisition more expensive by limiting the range of prices a bidder can pay in two-tier offers and by requiring severance payments to a large number of lower level employees in the event of a change in control.

Collectively we refer to the above set of provisions as "Takeover Defenses," and we hypothesize that firms are likely to increase this group of provisions in response to the elevated takeover risk from IDD.<sup>13</sup>

Alternatively, it is possible we will not observe any changes in the Takeover Defenses following the adoption of the IDD as these defenses are often in the firm's charter and most require shareholder approval (except poison pills) to amend. Coates (2001) argues that while managers usually prefer more provisions to defend takeovers, institutional investors often want fewer, and the power struggle between the two often results in no changes being approved and implemented.

Other reasons, such as varying beliefs among shareholders on benefits of takeovers and the tendency to maintain status quo on provisions instituted in the firm's charter, also result in the stickiness of ATPs over time (Johnson et al., 2015). Furthermore, managers may not change any provisions given that the ability of most ATPs to actually deter takeovers is not certain (Comment and Schwert, 1995; Catan and Kahan, 2016; Bates et al., 2008). Thus, whether and which Takeover Defenses firms change after IDD is an empirical question.

The remaining ATPs include "Compensation" provisions (compensation plans and golden parachutes), opting into or out of "State Laws" (e.g., business combination laws, control share laws and fair price laws), and "Other" provisions not related to takeovers (e.g., secret ballot, director indemnification contracts).

The Compensation provisions include golden parachutes, which require severance payments for senior officers in the event of a change in control, and compensation plans, which allow any

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<sup>13</sup>We include poisons pills under Takeover Defenses as they are clearly a tactic to deter acquirers. However, recent literature argues that poison pills can often be adopted with short notice and do not always require shareholder approval (Catan and Kahan, 2016; Coates, 2000). Thus, firms might not increase these provisions, on average, after IDD since the option to defend against a hostile bid by quickly adopting and triggering a poison pill remains in place. Therefore, in robustness tests, we repeat our analyses by excluding poison pills from the Takeover Defenses group.

officers and directors with incentive plans to cash out options or accelerate payout of bonuses after a change in control. Two opposing forces likely influence how managers respond to IDD via Compensation provisions. On the one hand, recent evidence by Bebchuk et al. (2014) finds golden parachutes are positively related to the likelihood of an acquisition bid, and Fich et al. (2013) links golden parachutes to a greater probability of merger completion. Therefore, to the extent that IDD increases takeover risk, managers wishing to deter takeover attempts may decrease Compensation provisions to lessen the likelihood of bids. On the other hand, if managers wish to extract rents from elevated takeover likelihoods post-IDD, then we may observe increases in Compensation provisions. Thus, the overall effect of these two motives on Compensation is an empirical question.

We do not expect firms to opt in or out of State Laws after IDD for two reasons. First, State Laws are based on the state of incorporation rather than the headquarter state where employees are affected by IDD. More than half of firms incorporate in Delaware due to its business-friendly laws for corporations (Daines, 2001). Second, Catan and Kahan (2016) argue that opting into State Laws offers little ability to protect against unsolicited takeover bids.

The remaining provisions, which we refer to as Other provisions, include director liabilities, indemnification, or indemnification contracts, severance agreements, limits to amend bylaws or charters, cumulative voting, secret ballot, and anti-greenmail. These provisions are unlikely to offer any protection to firms against takeover attempts and are unrelated to change in control events. Thus, we do not expect managers to change the Other provisions post-IDD.

## **3.2 Rationale for increasing Takeover Defenses**

### **3.2.1 Labor mobility**

Our first cross-sectional analysis tests the assertion that firms in IDD states increase Takeover Defenses more when the effect of IDD on labor mobility, and thus takeover likelihood, is marginally greater. Prior to IDD, we expect knowledge-worker mobility to be higher when there are a larger number of local rival firms and for employees in states with stronger worker rights. Both situations would have allowed employees to move to another firm at a lower cost, and the adoption of IDD is likely to affect acquirers' ability to lure employees away more in such states. Thus, we expect firms whose employees have higher ex-ante mobility in the labor market to face higher takeover risks and

have greater increases in Takeover Defenses post-IDD.

We measure ex-ante labor mobility in two ways. First, we use the number of firms in the same industry and state, because employees should have greater mobility when there are a larger number of peer firms in the local labor market (Chen et al., 2018). Second, we use ex-ante restrictions on labor mobility using state-level variation in enforcement of CNCs (Bird and Knopf, 2015).<sup>14</sup> CNCs are contracts used in various industries to prevent a departing employee from joining or creating a rival enterprise within a specific time period and geographic area.

### 3.2.2 Innovation activity

In our second set of cross-sectional tests, we examine the mechanism driving managers to alter Takeover Defenses. One motive to increase Takeover Defenses post-IDD is to protect firms' long-term investments and innovation. An increased threat of being acquired can affect investments in two ways. First, it reduces managerial incentives to devote effort in hard-to-value investments and promotes myopic behaviors (Stein, 1988; Shleifer and Summers, 1988). Second, the takeover attempt could come during early stages of long-term projects when acquirers may not value or understand the full potential of projects or investments. Related to this notion, acquirers may also close down promising R&D initiatives after the acquisition (Hitt et al., 1996; Valentini, 2012). All of these are potentially detrimental to long-term shareholder value. To the extent that managers increase Takeover Defenses to protect long-term, hard-to-value investments, we expect the increase in Takeover Defenses after IDD to be higher for firms where value creation is largely dependent on innovation and development of new products.

We proxy for firms with higher innovation activity using levels of R&D and intangibles assets to total assets (e.g., Zingales, 2000; Barth et al., 2001). Firms with more innovative activity are also likely to have more knowledge workers, such as scientists and technicians. Similar to Chen et al. (2018), we measure the proportion of knowledge workers in the industry and predict that firms with a higher fraction of knowledge workers will have greater increases in Takeover Defenses.

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<sup>14</sup>As noted in Section 2, NDAs are another form of employment contracts intended to protect trade secrets. We are unable to obtain data on NDAs for our sample.

### **3.2.3 Managerial entrenchment**

Another motive that can drive managers' decisions to increase Takeover Defenses is their desire to shield themselves from the market for corporate control and preserve their jobs at the cost of shareholder value (Gompers et al., 2003). If managers alter Takeover Defenses to preserve private benefits, then we expect larger increases in Takeover Defenses at firms with greater managerial entrenchment.

We proxy for entrenchment using firms where CEOs have a longer tenure as chief executive (Berger et al., 1997), lack of monitoring via a large shareholder (Bushee, 1998), and lower pay-performance sensitivity (Jensen and Murphy, 1990).

### **3.2.4 Long-run innovative output**

In our final set of analyses, we examine the innovation output of firms following the adoption of IDD. While causal interpretations are difficult in this case, the analyses can help shed additional light on the mechanism behind the decision to increase Takeover Defenses.

If firms increase Takeover Defenses following IDD to protect their innovation output, then we expect such increases to be associated with relatively more and higher quality patents than firms not increasing Takeover Defenses in the years following IDD. Alternatively, if firms are increasing Takeover Defenses primarily due to managerial entrenchment reasons, then we do not expect such increases to be associated with greater or higher quality patents in the years following IDD. The latter outcome would also be consistent with the literature showing that firms with higher Takeover Defenses are associated with lower stock returns, firm value, and operating performance (e.g., Gompers et al., 2003; Atanassov, 2013; Cremers and Ferrell, 2014)

## **4 Sample selection and variables**

### **4.1 Data**

We begin our sample by merging firms in the Compustat, CRSP, and ISS databases over 1990-2011. Our sample period is based on the ISS data availability for firm-level ATPs. We initially filter on firms headquartered in the U.S, which yields 38,125 firm-years. We remove firm-years with

missing identifiers in Compustat and those with no data on the various control variables in our regressions. Our final sample comprises 29,067 firm-years and 3,435 unique firms.

We obtain the details of IDD adoption dates from Klasa et al. (2018). Appendix A provides a description of the states that adopted these provisions and the precedent setting court cases and dates of adoption. New York was the first U.S. state to adopt the IDD in 1919. This was followed by three states adopting the IDD in the 1960s, one in the 1970s, four in the 1980s, nine in the 1990s, and three in the 2000s. In total, 21 states adopted the IDD, 12 of which adopted it over our sample period. Three states that had previously adopted IDD reject it over our sample period. As in Klasa et al. (2018), for the 21 states whose courts adopted the IDD, we create an indicator variable, *IDD*, and set it to equal to zero in all years preceding the date of the adoption, and equal to one the year of the adoption and afterwards.<sup>15</sup> For the remaining 29 states that did not explicitly adopt the IDD or subsequently rejected it, we set the *IDD* indicator equal to zero.

We obtain information on ATPs from the ISS database (see Appendix B for definitions of all individual provisions). ISS (formerly IRRC, and acquired by Riskmetrics in 2007) publishes details of firm- and state-level ATPs for 1990, 1993, 1995, 1998, 2000, 2002, 2004, and 2006. The data are available annually from 2007 to 2011. Following prior literature (e.g., Karpoff et al., 2017), we forward fill the missing years with values from the most recent year in ISS. For example, we use the 1990 values for 1991 and 1992, etc.<sup>16</sup> ISS obtains ATP data from corporate bylaws and charters, annual reports, proxy statements, and SEC Forms 10-Q and 10-K. The ISS universe covers the S&P 1500, which is more than 90% of the total market capitalization of the combined New York Stock Exchange, American Stock Exchange, and Nasdaq during our sample period.

Our main ATPs of interest are the 11 provisions categorized as Takeover Defenses. We consider this group, as well as the individual provisions within this group, in our tests. We also examine the changes in the Compensation, State Laws, and Other provisions.

Based on prior research, we employ a wide range of control variables that may affect a firm's ATP

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<sup>15</sup>For court decisions after July 1 of a calendar year, we set *IDD* adoption to the following year since firms must typically have a shareholder meeting to change takeover defenses. The results reported in the study are not sensitive to this adjustment, which should work against our findings.

<sup>16</sup>We note that forward filling the data may sometimes work against us in finding changes in takeover provisions. For instance, Massachusetts (MA) adopted the *IDD* in 1994. To examine if firms headquartered in MA changed their takeovers in 1994, we would need to examine takeover provisions in 1994. However, given that 1994 data is missing and we have used data from 1993 to fill this gap, we are unlikely to detect any changes that year. To circumvent this issue, we also conduct tests where we examine changes in takeover provisions in *IDD* adoption year 0, +1, and +2 so we can detect changes in immediate years following *IDD* adoption.



structure or the likelihood of being acquired (Chen et al., 2018; Bebchuk et al., 2008). Appendix C defines these variables, which include firm size, market-to-book, return on assets, leverage, cash ratio, R&D intensity, property ratio, sales growth, abnormal return, firm risk, institutional ownership, and turnover.<sup>17</sup> We also control for CEO ownership as higher levels of managerial share ownership also serve as a takeover defense mechanism (Catan and Kahan, 2016).

We include a Delaware incorporation indicator since firms incorporated in Delaware have differing levels of takeover protection under Delaware law (Daines, 2001). We also include controls for the strength of CNCs, as measured by the state-level enforcement index from Bird and Knopf (2015), and two state-level variables to control for the economic and political conditions in the state. We include the state GDP growth rate, as richer states may have more acquisition activity and firms in such states make face increased takeover risks. We obtain data on state GDP growth from the Bureau of Economic Analysis. To control for the political climate, we include political balance in the state, which is the fraction of a state’s members in the U.S. House of Representatives that belong to the Democratic Party, which we obtain from its History, Art & Archives.

## 4.2 Descriptive statistics

Table 1 provides summary statistics for our main dependent and independent variables. Panel A provides statistics on ATPs. The average sample firm year has three Takeover Defenses, one Compensation provision, zero net State Laws, and three Other provisions. Among the Takeover Defenses, the most common provisions include blank check (88%), classified boards (58%), and poison pills (52%). Approximately 66% of firm years have golden parachutes and 52% have compensation plans. Opting into or out of State Laws is rare. Among the Other provisions, the median firm uses anti-cumulative voting and anti-secret ballot.

[Insert Table 1 here]

Panel B reports that 51% of sample firm-years are from companies headquartered in a state that has adopted the IDD. Our median sample firm-years have a leverage ratio of 16.7% of total assets and a market-to-book ratio of 1.06, a cash ratio of 6.4% of total assets, and have 44.2% of total assets in the form of property, plant and equipment. The average CEO owns 1.6% of their firm.

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<sup>17</sup>The results are robust to using CEO pay-performance sensitivity instead of CEO ownership as a control.

In terms of performance, the median sample firm has a return on assets of 8.1%, sales growth of 7.7% and abnormal average daily returns around zero percent. The median firm has zero percent R&D intensity, 7.0% intangible asset intensity and knowledge worker proportion of about 25%. Approximately 56% of sample firm-years are for companies incorporated in Delaware. The average state CNC strength is 3.97 on a scale of zero to nine, the average state GDP growth rate is just under 5%, and the average political balance is 53% democratic.

## 5 Recognition of IDD and ATPs

### 5.1 Baseline regressions

Our primary research design is to employ a difference-in-difference methodology to compare the changes in ATPs following the adoption of IDD (the treatment group) to the changes in ATPs in states where IDD was not adopted (the control group). Such a test is possible because several U.S. state courts recognized the IDD in different years during the sample period.

We first conduct the following regression on the various antitakeover groups:

$$\begin{aligned} \text{Antitakover group}_{i,t} = & \alpha + \beta_1 \text{IDD}_{s,t} + \beta_2 \text{Firm characteristics}_{i,t} + \beta_3 \text{State controls}_{s,t} \\ & + \text{Firm FE} + \text{Year FE} + \epsilon \end{aligned} \tag{1}$$

In equation (1) the dependent variable is one of the four antitakeover groups, namely, Takeover Defenses, Compensation, State Laws, and Other. For all variables, the subscript  $i$  indicates firm,  $s$  indicates the state in which the firm’s headquarters is located, and  $t$  indicates the year. The variable IDD is a dummy variable that equals one if IDD is in place in state  $s$  in a given year, and zero otherwise. We include a vector of firm characteristics and state controls as described in the prior section. We also include firm and year fixed effects to control for time-invariant firm differences and time trends in the likelihood of being acquired across firms. Given that our treatment is defined at the state and year levels, we cluster standard errors by state and year.<sup>18</sup>

Our coefficient of interest is  $\beta_1$ , which is the average treatment effect of state recognition of IDD on ATPs. Table 2 presents the regression results. The coefficient estimates on IDD are positive

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<sup>18</sup>The results are similar if we cluster at the state level alone.

and statistically significant only in column (1) where the dependent variable is Takeover Defenses. The coefficient estimate on the IDD indicator is 0.090 and statistically significant at the 1% level, suggesting a positive treatment effect of the IDD adoption on the firm’s likelihood of increasing Takeover Defenses.<sup>19</sup> Given that the mean and standard deviation of Takeover Defenses is 3.34 and 1.75 respectively, this coefficient is economically significant as it represents an increase of about 3% of the mean and 5% of the standard deviation. The treatment effect is not statistically different from zero for any of the other groups of provisions (Compensation, State Laws, Other).

[Insert Table 2 here]

Among our control variables, we find that larger firms, firms with more tangible assets ratio, higher sales growth and lower risk are more likely to have higher Takeover Defenses. We also find that firms incorporated in Delaware are more likely to have higher Takeover Defenses. We find a negative and significant coefficient for leverage in Column (1), suggesting that firms with higher levels of debt have lower Takeover Defenses. This result supports the view that debt is a substitute mechanism that reduces the threat of takeovers (Zwiebel, 1996; Novaes, 2003), which works against us finding variation in Takeover Defenses.

One potential concern with the above analysis is that the control group might not be fully comparable across IDD and non-IDD states. To examine this possibility, we verify the robustness of the results by employing an entropy balancing technique to ensure that firms in IDD and non-IDD states are comparable. In results presented in the Internet Appendix, we follow Hainmueller (2012) in balancing the first three moments (mean, variance, and skewness) of the treatment (IDD) and control (non-IDD) firms and re-estimate our regression on this entropy-balanced sample. The results are similar to those reported in Table 2. For example, the coefficient on IDD where the dependent variable is Takeover Defenses increases from 0.090 to 0.112 for the entropy-balanced sample.

Our analysis above sets the IDD indicator to zero if the IDD is not in place in a state in a given year – these include all states that did not consider the IDD and those that considered but explicitly

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<sup>19</sup>As mentioned earlier, there is a strong likelihood that firms will not increase poison pills after IDD given that nearly all firms have a “shadow pill” provision (Coates, 2000; Catan and Kahan, 2016). When we repeat this test excluding poison pills from Takeover Defenses, the IDD coefficient increases to 0.100 and remains statistically significant at the 1% level.

rejected the IDD (including those that had earlier adopted the IDD but subsequently rejected it). To examine if the explicit rejection of IDD by certain states had any effect on Takeover Defenses, in additional analysis we modify equation (1) to include an “IDD reject” dummy that equals one for states that considered and rejected the IDD.<sup>20</sup> We find that the IDD reject dummy is negative and statistically significant (coefficient =  $-0.080$ ;  $t$ -stat =  $-2.52$ ), while the IDD adopt dummy continues to be positive and statistically significant at the 10% level. The decrease in Takeover Defenses in response to the rejection of the IDD, and thus a reduction in threat of takeovers, provides additional support to the managerial use of certain ATPs in response to takeover threats.

The validity of difference-in-differences estimation depends on the parallel trends assumption: absent the IDD, treated firms’ tendencies to increase ATPs would have evolved in the same way as that of control firms. In other words, firms would not have increased their ATPs differently to combat the increased takeover likelihood without IDD treatment. We follow Chen et al. (2018) by investigating the pre- and post-IDD trends in the various ATPs between the treated group and the control group to examine the timing of the changes in more depth.

We re-estimate equation (1) by replacing the IDD indicator with seven indicator variables:  $IDD^{-3}$ ,  $IDD^{-2}$ ,  $IDD^{-1}$ ,  $IDD^0$ ,  $IDD^{+1}$ ,  $IDD^{+2}$  and  $IDD^{3+}$ . These variables indicate the year relative to the adoption of the IDD:  $IDD^{-3}$  indicates that it is three years before the IDD adoption;  $IDD^{-2}$  indicates that it is two years before the IDD adoption;  $IDD^{-1}$  indicates that it is one year before the IDD adoption;  $IDD^0$  indicates the year in which the IDD is adopted;  $IDD^{+1}$  indicates that it is the year after the IDD adoption;  $IDD^{+2}$  indicates that it is two years after the IDD adoption;  $IDD^{3+}$  indicates that it is three or more years after the IDD adoption.

The coefficients on  $IDD^0$ ,  $IDD^{+1}$ , and  $IDD^{+2}$  are important in our case for two reasons. First, ATPs are often difficult to change as they frequently require shareholder approval and it could take some time for firms to change them. For instance, if firms have to wait for their annual shareholder meetings or need to convince their shareholders in order to alter these provisions in a special meeting, then there could be a lag in adopting certain provisions. Second, we had to forward fill the data from ISS due to several missing years prior to 2007. In the situations where a state adopts IDD in a year when the ATP data was not available, then we will not pick up the

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<sup>20</sup>These results are presented in the Internet Appendix. Based on Klasa et al. (2018) and Wiesner (2012), the IDD rejection states (year of rejection) include California (2002), Florida (2001), Louisiana (1983), Maryland (2004), Michigan (2002), Texas (2003), and Virginia (1999).

effect until one or two years after the adoption.

Given that it could take longer periods of time to gain shareholder approval for ATPs, the  $IDD^{3+}$  indicator could be important as well since it captures changes in years 3 or longer. However, we do not have strong predictions for this coefficient since it also captures changes in years well after  $IDD$  was adopted and it absorbs  $IDD$  adoption prior to the beginning of our sample period. For longer lengths of time after  $IDD$ , it is not clear as to what one may expect in terms of changes in ATPs.

The coefficients on the  $IDD^{-2}$  and  $IDD^{-1}$  indicators are also important because their significance and magnitude will indicate the differences (if any) that exist between the ATPs of the treatment group and the control group prior to the adoption of the  $IDD$ , and to verify whether the parallel trends assumption holds.

Table 3 presents these results. For the Takeover Defenses group, the coefficients on  $IDD^{-1}$  and  $IDD^{-2}$  are not significantly different from zero. Thus, the parallel trends assumption of the difference-in-difference is not violated. The impact of the  $IDD$  shows up in the first two years after adoption: the coefficients on the  $IDD^0$  and  $IDD^{+1}$  become significantly positive (at the 1% and 10% levels). The coefficient on  $IDD^{3+}$  is also positive and statistically significant (at the 1% level). None of the other groups exhibit any strong pre- or post-trends except for State Laws, where the coefficient on  $IDD^{-1}$  and  $IDD^{+1}$  are significantly negative but small.

Interestingly, the coefficient on  $IDD^0$  for Compensation become significantly positive in this table (at the 10% level). Further analysis on the trend in the individual provisions under Compensation showed that this effect comes from golden parachutes, which is positive and marginally significant at  $IDD^0$ , suggesting that managers increased golden parachutes in the year of  $IDD$  adoption. However, when we repeat these tests using the individual Compensation provisions on the overall adoption of  $IDD$  (analogous to Table 4 below), we do not find any significant relations, consistent with the results in Table 2.

[Insert Table 3 here]

While the results in Tables 2 and 3 confirm that treatment firms increase Takeover Defenses just after the  $IDD$  adoption, we also examine the individual provisions within this group to determine which provisions managers alter after  $IDD$ . We repeat the regressions in equation (1) using each

of the individual provisions as our dependent variables. We only focus on the Takeover Defenses group from this point onwards as this is the only group where we observe consistent variation in the treatment firms.<sup>21</sup>

Table 4 presents these results. We find that several, but not all, of the provisions in Takeover Defenses are significantly changed after IDD. The coefficient estimates on IDD are positive and statistically different from zero at the 5% level or better for the following provisions: written consent, classified board, blank check, directors' duties, pension parachute, silver parachute and unequal voting. Fair price is negative and significant. We obtain the largest coefficients for written consent (0.036) followed by classified board (0.015), both of which are significant at the 1% level. The increases in written consent and classified boards are 8.57% (7.35%) and 2.59% (3.06%) of the corresponding means (standard deviations), respectively. For the other significant provisions, the increases range between 1% and 40% of the corresponding means, and between 3% and 6% of the corresponding standard deviations.

[Insert Table 4 here]

In unreported analyses, we repeat our tests on the individual provisions by replacing the IDD indicator with the seven indicator variables:  $IDD^{-3}$ ,  $IDD^{-2}$ ,  $IDD^{-1}$ ,  $IDD^0$ ,  $IDD^{+1}$ ,  $IDD^{+2}$  and  $IDD^{3+}$ . As before, the strongest effects are on written consent, pension parachute and silver parachute, followed by classified board, blank check, and directors' duties. Overall, once we consider the individual provisions, we see several increases just after the adoption of the IDD for the treatment firms.

## 5.2 Antitakeover provisions and takeover likelihood

Given the findings in the prior section, we next examine whether increases in Takeover Defenses are associated with a lower probability of being acquired. For these tests, we generate a dependent variable equal to one if the firm is acquired over the subsequent one through five years, using data from the SDC M&A database.<sup>22</sup> We follow the methodology in Chen et al. (2018) in designing these tests. We partition firms into two groups based on changes in Takeover Defenses. The variable

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<sup>21</sup>Repeating our tests using individual provisions and groups as a whole for the other three categories confirmed that firms do not significantly alter any of these provisions after the adoption of the IDD.

<sup>22</sup>We use the announcement date correction methodology described in Mulherin and Simsir (2015).

Defense Up which takes the value of one if the firm experiences an increase in the total value of Takeover Defenses as compared to the prior year, and the variable Defense Not Up is equal to  $(1 - \text{Defense Up})$ . We generate two interaction variables:  $\text{IDD} \times \text{Defense Up}$  and  $\text{IDD} \times \text{Defense Not Up}$ , where the IDD indicator is limited to the year of IDD treatment. We re-estimate equation (1) by replacing the IDD indicator with the two interaction variables. In these regressions, in addition to firm fixed effects, we follow Chen et al. (2018) and control for regional time trends through the interaction of region dummies with year dummies. These interactions control for any time-varying differences between geographic regions of the U.S. in corporate acquisitions and in the recognition of the IDD.<sup>23</sup>

The results, presented in Table 5, compare the acquisition likelihoods for IDD firms that choose to increase or not increase their Takeover Defenses after IDD passage versus a control sample of non-IDD firms.

[Insert Table 5 here]

We find that the coefficients are negative and significant for the interaction  $\text{IDD} \times \text{Defense Up}$  in the all of the one through five years following adoption of IDD. *F*-tests reveal that these coefficients are statistically smaller than the coefficients on  $\text{IDD} \times \text{Defense Not Up}$  interactions in years one and three. These results suggest that increases in Takeover Defenses are associated with a lower probability of being acquired for IDD firms that increase the provisions in this group as compared to IDD firms that do not. This result is supportive of the conjecture that the specific ATPs that managers increased in response to the IDD attenuate takeover risk.

## 6 Cross-sectional tests

We conduct several cross-sectional tests to examine variation in Takeover Defenses after IDD based on labor mobility, level of innovation, and managerial entrenchment, and how these changes are associated with long-run innovation. We continue to use a difference-in-difference methodology and follow Chen et al. (2018) in designing our cross-sectional tests.<sup>24</sup>

<sup>23</sup>The four U.S. regions based on the classification of the U.S. Census Bureau include Northeast, South, Midwest, and West (Chen et al., 2018).

<sup>24</sup>Our cross-sectional tests include the standard controls, but are robust to controlling for all of the other cross-sectional variables we consider.

## 6.1 Labor mobility

Given that the impact of the IDD on a firm’s likelihood of being acquired is due to the increased labor market frictions to hire human capital directly, we expect the treatment effect to be stronger for firms whose employees have higher ex-ante mobility in the labor market. Employees likely have better mobility when there are a larger number of industry peer firms operating in the local labor market (Gao et al., 2015; Chen et al., 2018) and/or when employees are not subject to strong non-compete agreements (Bird and Knopf, 2015). Thus, following these studies, we use the number of firms in the same 3-digit SIC industry headquartered in the same state as a proxy for the ex-ante labor market mobility, and the enforcement index from Bird and Knopf (2015) to proxy for the strength of CNCs at the state level.

We define the High mobility indicator as one if either the number of Compustat firms in the same 3-digit SIC industry and state is above the sample 75<sup>th</sup> percentile during a given year, or if the firm is in a state where the enforcement index is below the sample 75<sup>th</sup> percentile during a year, and zero otherwise. The Low mobility indicator is defined as  $(1 - \text{High mobility})$ .<sup>25</sup>

We re-estimate Equation (1) by replacing the IDD indicator with  $\text{IDD} \times \text{High mobility}$  and  $\text{IDD} \times \text{Low mobility}$  and present the results in Table 6, columns (1) (corresponding to number of rivals) and (2) (corresponding to the CNC index).

[Insert Table 6 here]

In the case of the number of rivals, the coefficient on  $\text{IDD} \times \text{High mobility}$  is 0.198, which is positive and significant at the 1% level. The coefficient on  $\text{IDD} \times \text{Low mobility}$ , 0.080, is also positive and significantly different from zero at the 5% level. An  $F$ -test reveals that the coefficient on the interaction of High mobility with IDD is significantly larger than the latter coefficient at the 5% level ( $F = 6.45$ ). This result indicates that the treatment effect is significantly larger for firms whose employees likely had more opportunities to switch jobs ex-ante, whereas it is smaller for firms surrounded by few industry peers. In Column (2) where we consider the CNC enforcement index, the coefficient on  $\text{IDD} \times \text{High mobility}$  is 0.163, which is positive and significant at the 1% level. The coefficient on  $\text{IDD} \times \text{Low mobility}$  is  $-0.087$  and is significant at the 5% level. Not

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<sup>25</sup>The results are similar when we use the sample median instead.



surprisingly, an  $F$ -test reveals that the coefficient on the interaction of High mobility with IDD is significantly larger than that for Low mobility at the 1% level ( $F = 22.51$ ).

## 6.2 Innovative activity

We next examine whether the increases in Takeover Defenses are higher for firms where innovation is key to value creation. We use three measures to proxy for firms with higher levels of innovation: knowledge workers (Chen et al., 2018), R&D intensity (Zingales, 2000), and intangible asset intensity (Aboody and Lev, 1998; Barth et al., 2001).

Firms with a greater focus on innovation are likely to have a higher proportion of knowledge workers. Following Chen et al. (2018), we measure this variable as the number of knowledge workers as a proportion of all workers in the industry. We obtain employment data from the Integrated Public Use Microdata Series (IPUMS) database. Per the IPUMS occupational codebook, knowledge workers are those with an occupational code below 200 (based on 1990 data), and includes occupations such as managers, scientists, engineers, computer programmers, and information technology professionals.<sup>26</sup> To calculate all workers in the industry we consider the 3-digit NAICS industry in a given year.<sup>27</sup>

We use the proportion of R&D expenditures to total assets and the ratio of intangible assets to total assets to identify firms with high innovation and long-term investment activities. Intangible assets include items such as copyrights, engineering drawings, patents and trademarks, which are likely to be higher in firms that have greater levels of innovation.

For each of these innovation proxies, we define High innovation as an indicator variable that equals one if the innovation proxy is above the sample 75<sup>th</sup> percentile, and zero otherwise.<sup>28</sup> We

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<sup>26</sup>The IPUMS website provides U.S. census and American Community Survey (ACS) data on individual worker’s occupational code, industry, and state. Occupational data are available every ten years before 2000, and annually since 2000. We follow Chen et al. (2018) by using census data for the years 1980, 1990, and 2000 for the periods of 1980-1985, 1986-1995, and 1996-2000, respectively; and the annual ACS survey data after 2000.

<sup>27</sup>We also verify the robustness of our results using a slight variation of the above measure where we modify the industry classifications by converting all of the data to the 2012 NAICS industry classifications. To avoid the changing industry classifications over time, this approach provides a consistent NAICS 2012 classification for all observations. The results are nearly identical with either approach.

<sup>28</sup>Given the nature of the distribution of R&D (right skewed), we use the 75<sup>th</sup> percentile of this variable to calculate high innovation (see Table 1, panel B). To be consistent, we continue to use the 75% for the other innovation variables as well. However, using the 50th percentiles for the innovation variables (other than R&D) produces similar results. We do not repeat the test using median values for R&D as the median is zero in our sample, so any non-zero value would be considered “High innovation”. Thus, using median R&D would not give meaningful results.

define Low innovation indicator as  $(1 - \text{High innovation})$ .

We re-estimate Equation (1) by replacing the IDD indicator with IDD interacted with each measure of high and low innovation activity. Table 6 columns (3) - (5) present the results. The results for the all three innovation activity variables are very similar. In the case of knowledge workers, the coefficient on  $\text{IDD} \times \text{High innovation}$  is 0.232 and significant at the 1% level. The coefficient on  $\text{IDD} \times \text{Low innovation}$  is also positive at 0.050 and marginally significant at the 10% level. However, the  $F$ -test of the difference between these coefficients indicates that the former is significantly larger than the latter coefficient at the 1% level ( $F = 22.36$ ).

We find similar results on the other two measures of innovation. The coefficient on  $\text{IDD} \times \text{High innovation}$  for R&D intensity is 0.122 and for intangible asset intensity is 0.147, both of which are significantly different from zero at the 1% level. The coefficient on the interaction corresponding to low R&D intensity is not significant, but the corresponding interaction for low intangible intensity is positive and significant. However, in both columns (4) and (5), the coefficients on the high measure of innovation (R&D and intangible asset intensity) are significantly larger than the respective coefficients on the interaction between IDD and low innovation measures ( $F = 7.40$  and  $8.68$ , respectively).

These results indicate that the increases in Takeover Defenses by firms after IDD treatment is significantly higher for those with a high level of innovation activity, and is either absent or significantly lower in firms with low innovation activity. One question that arises is whether firms with high levels of any investment, either tangible or intangible, are more likely to increase their Takeover Defenses. To examine this possibility, we repeat the above analyses using a measure that captures high level of tangible investments, as proxied by high capital expenditures as a proportion of total assets. In untabulated results, we find that firms with both high and low levels of capital expenditures increased Takeover Defenses, but the difference between these increases is not statistically significant.

### 6.3 Managerial entrenchment

If managers are primarily increasing their Takeover Defenses motivated by the desire to preserve their private benefits at the cost of shareholder value, then we expect that the increases in Takeover Defenses will be higher in firms where managers are more likely to be entrenched. We consider

three measures to capture managerial entrenchment: the tenure of the CEO (Berger et al., 1997), the presence of at least one 5% blockholder as a monitor (Bushee, 1998), and the pay-performance sensitivity of the CEO (Jensen and Murphy, 1990; Core and Guay, 2002). We measure CEO pay-performance sensitivity (delta) using the sensitivity of a CEO’s wealth to stock price changes, measured as the change in the dollar value of the executive’s stock and options for a 1% change in the stock price, following Core and Guay (2002) and Coles et al. (2006). For this measure, we interpret lower values of CEO delta as reflecting higher levels of entrenchment.

For the three entrenchment proxies, we define the High entrenchment indicator as one if the tenure of the CEO of the firm is above the sample 75<sup>th</sup> percentile, if there are no external blockholders, and if their CEO pay-performance sensitivity is below the sample 25<sup>th</sup> percentile, and zero otherwise.<sup>29</sup> We define the Low entrenchment indicator as  $(1 - \text{High entrenchment})$ .

We replace the IDD indicator in Equation (1) with the interactions of IDD and the high and low managerial entrenchment proxies. Table 6 columns (6), (7) and (8) presents the results. The results are similar across the three variables. For CEO tenure and blockholders, the coefficients on the interactions between IDD and high managerial entrenchment are not statistically significant, but the corresponding interactions with the low managerial entrenchment variable is statistically significant (at the 5% levels). The  $F$ -tests reveal that the differences between these coefficients are not significantly different from zero ( $F = 2.07$  and  $0.20$ , respectively). For CEO delta, the coefficients on  $\text{IDD} \times \text{High entrenchment}$  is significant (at the 5% level), but that on  $\text{IDD} \times \text{Low entrenchment}$  is not. However, the  $F$ -test indicates that these coefficients are not significantly different from each other ( $F = 0.16$ ). Collectively, these results suggest that the treatment effect is not significantly different for firms with a high versus low managerial entrenchment, and fail to support the conjecture that managers increase Takeover Defenses post-IDD for self-serving reasons.

In sum, the above cross-sectional evidence is consistent with the argument that a higher threat of takeovers to obtain a firm’s human capital and/or trade secrets after IDD results in firms increasing their Takeover Defenses, and firms with more innovation activity, but not with higher managerial entrenchment, are more likely to do so.<sup>30</sup> It is possible however, that managers in high innovation

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<sup>29</sup>We use the 75<sup>th</sup> percentile versus the median in these cases to be consistent with the other measures and to capture the high entrenchment firms. However, our results are robust to using the sample median in both cases.

<sup>30</sup>Chen et al. (2018) conduct a series of robustness tests which allow them to conclude that the IDD is associated with acquisitions where the acquiring firms are more likely to retain the target firms’ key technological employees (i.e., inventors) but more likely to dispose of the targets fixed assets and rank-and-file employees.

firms are also more entrenched and increase their Takeover Defenses in order to preserve their private benefits at the cost of shareholder value. However, if that were the case, we should have also found similar evidence using our managerial entrenchment variables. The *lack* of evidence for high managerial entrenchment firms gives us more assurance in our inferences regarding managers' desires to protect innovation capital when increasing Takeover Defenses. Repeating our cross-sectional analyses by including all possible combinations of innovation and entrenchment variables in the same regressions also produced similar results.

#### 6.4 Takeover premium

An additional explanation, not inconsistent with a value-increasing intent, is that managers may strengthen Takeover Defenses after IDD to increase their bargaining power in the event of a takeover bid. Thus, in additional tests we examine whether increases in Takeover Defenses are associated with higher takeover premiums for completed deals.

Our sample for this test includes firms that are acquired in the subsequent two years using data from the SDC M&A database. As before, we partition firms based on changes in Takeover Defenses and interact these with the IDD indicator, which is limited to the year of IDD treatment. We measure takeover premiums as the announcement returns over various windows around the merger announcement dates provided in SDC, and consider all acquisitions within the first two years of IDD adoption. Following Mulherin and Simsir (2015), we consider two announcement windows,  $[-5,+5]$  and  $[-63,+126]$ . The results are presented in Table 7; columns (1) and (2) provide value-weighted results, while columns (3) and (4) present equal-weighted results (results are consistent across both weightings).

[Insert Table 7 here]

We find some suggestive evidence supporting the presence of higher takeover premiums for firms that increased certain ATPs post-IDD. When we consider  $[-5,+5]$  announcement window, we find that cumulative announcement returns for target firms are approximately 3-4% higher for IDD firms increasing Takeover Defenses versus those that do not. This difference is statistically different from zero at the 10% level or better. However, the statistical significance of these differences is sensitive

to the event period window, and are not significant once we consider the longer  $[-63,+126]$  event window that includes the deal closing date.

Given that the differences in announcement returns are not always significant, and the difficulty in identifying when the market became aware of the acquisition (Mulherin and Simsir, 2015), we are cautious in interpreting these results as showing increased Takeover Defenses improves managerial bargaining power in this setting. However, we note that none of the results are consistent with the notion that increasing Takeover Defenses harms shareholders conditioned on being acquired.

## 6.5 Long-run innovation

In this subsection, we examine innovation activity conditional on the choice to respond to IDD treatment by altering Takeover Defenses. We caution the reader that although the IDD appears to be a source of plausibly exogenous variation in the likelihood of firms being acquired, the choice to alter Takeover Defenses is an endogenous response by firms. Nevertheless, since the results in Subsection 6.2 reveal that firms with more innovative activities tend to respond more to the IDD by increasing Takeover Defenses, we explore the correlation between this endogenous response and long-run innovation activities.

Specifically, our goal is to examine the association between the choice to increase (or not increase) Takeover Defenses by firms after IDD and subsequent annual innovation activity over the following one to five years. In each of these tests we retain and also partition the control sample of non-IDD firms based on changes in Takeover Defenses.

We examine two measures of innovation: the number of patents (i.e., quantity) and the citation-weighted value of patents (i.e., quality). We obtained both measures from Kogan et al. (2017) and logarithmically transform the quantity of the observed value.<sup>31</sup> For these tests, we follow Kogan et al. (2017) in excluding firms operating in financial (SIC codes 6000 to 6799) and utilities (SIC codes 4900 to 4949) industries.<sup>32</sup> We also exclude firms with zero patenting activity. These measures are then cumulated for the period one to five years going forward.

Similar to the cross-sectional tests in Table 6, we generate two interaction variables:  $IDD \times$  Defense Up and  $IDD \times$  Defense Not Up.<sup>33</sup> The variable Defense Up takes the value of one if the

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<sup>31</sup>We download patent data from Noah Stoffman's website: <https://iu.app.box.com/v/patents>.

<sup>32</sup>The primary results reported in this paper are robust to excluding financial and utility firms.

<sup>33</sup>We use similar controls as in Table 6, except for R&D because it is likely correlated with the innovation variables.

firm experiences an increase in the total value of Takeover Defenses as compared to the prior year. The variable Defense Not Up is equal to  $(1 - \text{Defense Up})$ . Thus, the results reported in Table 8 compare long-run innovation for IDD firms that endogenously choose to increase or not increase their Takeover Defenses after IDD passage versus a control sample of non-IDD firms with similar changes in Takeover Defenses.

[Insert Table 8 here]

Panel A presents the results for the number of patents. We find that IDD firms increasing their Takeover Defenses have a significantly positive correlation with the number of patents in the years following the IDD. The magnitude of the coefficient on IDD declines in size from years one to three, but remains statistically significant and positive through this period. The correlation disappears in year four, but remains present in year five. Conversely, we find no significant correlation between IDD firms that did not increase their Takeover Defenses and patent quantity. Further, the  $F$ -tests reveal that the coefficients for the interactions  $\text{IDD} \times \text{Defense Up}$  are significantly higher than those for  $\text{IDD} \times \text{Defense Not Up}$  in all years except for year four.

We find similar results for the quality of patents in Panel B. IDD firms that increase their Takeover Defenses have significantly higher patent citations in years one, three, and five, following these changes as compared to the control firms. In contrast, IDD firms that did not increase their Takeover Defenses demonstrate no difference in patent quality over the subsequent five years as compared to control firms that do not increase Takeover Defenses. The  $F$ -tests reveal that the coefficients for the interactions  $\text{IDD} \times \text{Defense Up}$  are also significantly higher than those for  $\text{IDD} \times \text{Defense Not Up}$  in years one, three, and five.

While patents are one key output of firms' innovation initiatives, many firms, especially after IDD, may elect to simply keep their disclosures on inventions more guarded in the form of trade secrets instead of disclosing them through a patent. Ideally, we would be able to observe trends in trade secrets after IDD. However, the challenge is that trade secrets are by definition unobservable and difficult to measure. Nevertheless, we attempt to capture this aspect of firms' innovation activities by following Glaeser (2018). We take the logarithmic transformation of one plus the number of times a firm references the text string "trade secrets" or "trade secrecy" in its annual

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However, our results are robust to including it as a control.

SEC Form 10-K filing, as our proxy of the firm’s quantity of trade secrets. We then examine firms’ trade secret activity in the five years following the IDD adoption. As in Glaeser (2018), we limit our analysis to the period after 1996 since electronic SEC filings were not mandatory prior to May 5, 1996.

Table 8, panel C reports the results for trade secrets. We find that IDD firms increasing their Takeover Defenses have approximately twice as many trade secret disclosures in the years following the IDD. The  $F$ -tests reveal that the coefficients for the interactions  $\text{IDD} \times \text{Defense Not Up}$  are significantly lower than those for  $\text{IDD} \times \text{Defense Up}$  for years two, three, and five.

Taken together, the evidence in Panels A to C imply that firms increasing Takeover Defenses following IDD experienced more and better innovation. However, we recognize that changes in innovation in the period after IDD can result directly from the incentives that IDD per se had on knowledge workers. On the one hand, an employer-friendly trade secrecy regime places friction on the circulation of individuals and ideas across firms and markets, which can mute innovation (Hellman and Perotti, 2011). The lack of mobility of employees due to trade secrecy regimes such as IDD can further lower an employee’s capacity to signal their ability in the external labor market, thus lowering their incentives to invest in innovation (and other corporate) activities. Contigiani et al. (2018) exploit the adoption of IDD in Illinois in 1995 as compared to other Midwestern states, and provide results consistent with this negative association, primarily due to muting employee’s ability to signal their quality. On the other hand, while the evidence suggests a negative relation, one can also argue that a more employer-friendly trade secrecy regime may incentivize employers to increase investments in organizational capital (e.g., Li et al., 2018), including in their employees, which may boost innovation outcomes.

To examine the influence of IDD per se on innovation and explore the above conflicting notions for our sample, we also repeat the above tests using only the IDD indicator and standard controls in Panel D of Table 8. We examine the effect of the passage of the IDD on patent and trade secrets activity without controlling for the choice to alter Takeover Defenses. The IDD indicator is never significant in the patent tests, indicating that there was no significant difference in patent quantity and quality between the treatment versus control firms in the period following the IDD. However, consistent with Glaeser (2018), we do find a positive correlation between IDD and trade secrets.

Given that IDD directly serves to protect firms’ trade secrets, it is not surprising that we

find an increase in treatment firms' trade secrecy activity after IDD. However, our cross-sectional regressions suggest that treatment firms with increases in Takeover Defenses had almost twice as many trade secrets, which offers some richer evidence on variations in innovation activity across treatment firms. Although IDD did not influence treatment firms' inclinations to patent their innovations more versus control firms; however, once we consider finer partitions based on increases in Takeover Defenses, it appears that firms that chose to increase protections against takeovers were also more likely to patent their innovations, in addition to innovating more through trade secrets.

In sum, the tests in Table 8 suggest that firms increasing Takeover Defenses following IDD also enjoy higher ex-post patent quantity and quality and trade secrets. These findings are consistent with the notion that increasing Takeover Defenses in this setting is correlated with beneficial outcomes for innovative firms.

## 7 Conclusion

We investigate whether managers strengthen Takeover Defenses when facing an increased threat of being acquired, and the potential mechanisms driving their decision. We exploit the exogenous shocks from the staggered recognition of IDD by U.S. state courts. This doctrine decreases the mobility of knowledge workers by preventing them from joining rival companies, thus increasing the cost of a rival firm to directly poach the target's employees from the labor market. In turn, IDD increases the likelihood that firms with higher levels of knowledge capital are acquired by their rivals.

We predict and find that managers respond to this plausibly exogenous increase in takeover likelihood by increasing their Takeover Defenses. In particular, they increase the following provisions, all of which increase the cost of acquisitions for the acquirer: written consent, classified board, blank check, directors' duties, pension parachute, silver parachutes, and unequal voting. The increase in Takeover Defenses is stronger for firms with many in-state rivals and for firms with weaker state-level enforcement of CNCs, suggesting these employees had greater ex-ante employment mobility prior to IDD. Firms that increase Takeover Defenses experience reductions in the probability of being acquired.

Next, our cross-sectional tests indicate that managers increase Takeover Defenses in order to



protect their investments in innovation rather than for entrenchment reasons. Finally, in line with the protection of innovation, we find that firms that increase Takeover Defenses following IDD have higher ex-post quantity and quality of patents and more trade secrets.

Our study adds to the literature on the managerial use of ATPs. We show that managers, particularly in high innovation firms, are likely to increase certain provisions to deter takeovers in the presence of elevated acquisition risk. These firms also have higher innovation output in the five years after IDD, which suggests that ATPs can be beneficial for shareholders in certain firms. We also document the specific ATPs that managers choose to strengthen once they face an increased threat of takeovers, and the effectiveness of these ATPs in deterring takeover attempts. Finally, we add to the growing literature on the changes in various corporate policies and outcomes in states that adopt the IDD.

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**Table 1**  
**Summary statistics**

Panel A: Antitakeover provisions					
	Mean	SD	P25	Median	P75
Takeover Defenses	3.34	1.75	2	3	5
<i>Limits to written consent</i>	0.42	0.49	0	0	1
<i>Classified board</i>	0.58	0.49	0	1	1
<i>Blank check</i>	0.88	0.33	1	1	1
<i>Director duties</i>	0.08	0.27	0	0	0
<i>Silver parachute</i>	0.02	0.14	0	0	0
<i>Pension parachute</i>	0.02	0.14	0	0	0
<i>Unequal voting</i>	0.02	0.14	0	0	0
<i>Limits to special meeting</i>	0.39	0.49	0	0	1
<i>Supermajority</i>	0.16	0.36	0	0	0
<i>Fair price</i>	0.26	0.44	0	0	1
<i>Poison pill</i>	0.52	0.50	0	1	1
Compensation	1.18	0.70	1	1	2
<i>Golden parachutes</i>	0.66	0.47	0	1	1
<i>Compensation plans</i>	0.52	0.50	0	1	1
State Law (net)	-0.11	0.48	0	0	0
<i>Business combination law</i>	-0.03	0.18	0	0	0
<i>Fair price law</i>	-0.01	0.11	0	0	0
<i>Control share acquisition law</i>	-0.06	0.23	0	0	0
<i>Directors duties law</i>	0.01	0.08	0	0	0
<i>Cash out law</i>	0.00	0.07	0	0	0
<i>Recapture of profits law</i>	0.01	0.12	0	0	0
Other	3.27	1.21	2	3	4
<i>Severance agreements</i>	0.07	0.26	0	0	0
<i>Director liabilities</i>	0.45	0.50	0	0	1
<i>Director indemnification</i>	0.26	0.44	0	0	1
<i>Director indemnification contracts</i>	0.10	0.30	0	0	0
<i>Limits to amend bylaws</i>	0.35	0.48	0	0	1
<i>Limits to amend charter</i>	0.23	0.42	0	0	0
<i>Anti-cumulative voting</i>	0.89	0.32	1	1	1
<i>Anti-secret ballot</i>	0.89	0.32	1	1	1
<i>Anti-greenmail</i>	0.04	0.20	0	0	0

**Table 1 (continued)**

Panel B: Firm characteristics					
	Mean	SD	P25	Median	P75
Treatment Variable					
<i>IDD</i>	0.51	0.50	0.00	1.00	1.00
Control variables					
<i>Firm size</i>	7.55	1.68	6.33	7.39	8.61
<i>Market-to-book</i>	1.42	1.76	0.72	1.06	1.68
<i>Return on assets (%)</i>	8.14	10.99	3.66	8.11	12.92
<i>Leverage (%)</i>	19.38	18.11	3.78	16.73	29.75
<i>Cash ratio (%)</i>	12.94	15.98	2.08	6.41	17.64
<i>R&amp;D intensity (%)</i>	2.68	5.94	0.00	0.00	2.64
<i>Property ratio (%)</i>	52.33	40.85	19.19	44.22	79.28
<i>Sales growth (%)</i>	16.98	732.18	1.30	7.68	16.83
<i>Abnormal returns (%)</i>	-0.03	0.19	-0.12	-0.03	0.06
<i>Firm risk (%)</i>	2.45	1.51	1.53	2.08	2.93
<i>Turnover (%)</i>	16.03	15.83	5.86	11.21	20.69
<i>Delaware inc. (%)</i>	56.35	49.60	0.00	100.00	100.00
<i>State GDP growth (%)</i>	4.85	2.85	3.51	4.89	6.67
<i>Political balance (%)</i>	53.41	19.42	40.63	54.55	62.50
<i>Strength of CNCs</i>	3.97	2.13	3.00	4.00	5.00
<i>CEO ownership (%)</i>	1.60	4.98	0.00	0.15	0.67
Other partitioning variables					
<i>Number of rivals</i>	16.17	35.48	1.00	2.00	13.00
<i>Knowledge workers (%)</i>	27.72	14.30	15.78	25.00	39.44
<i>Intangible assets (%)</i>	14.16	17.24	0.75	6.95	22.15
<i>CEO tenure</i>	7.99	7.72	2.70	5.59	10.50
<i>Blockholder (%)</i>	82.22	38.24	100.00	100.00	100.00
<i>CEO delta</i>	1,176.49	12,144.41	68.28	194.19	548.47
Long-term innovation					
<i>Number of patents</i>	18.61	118.81	0.00	0.00	3.00
<i>Patent citations</i>	42.70	280.97	0.00	0.00	6.25
<i>Trade secrets</i>	1.75	4.31	0.00	0.00	2.00

This table presents summary statistics of governance provisions (Panel A) and firm characteristics (Panel B) for the sample period 1990-2011. See Appendix C for variable definitions.

**Table 2**  
**Adopting IDD and categories of antitakeover provisions**

	Takoever Defenses	Compensation	State Laws	Other
	(1)	(2)	(3)	(4)
<i>IDD</i>	0.090 <sup>***</sup> (2.78)	-0.011 (-0.94)	-0.010 <sup>*</sup> (-1.72)	-0.001 (-0.04)
<i>Firm size</i>	0.118 <sup>***</sup> (6.48)	0.001 (0.08)	0.002 (0.37)	0.011 (1.25)
<i>Market-to-book</i>	0.004 (1.35)	-0.006 <sup>**</sup> (-1.97)	-0.001 (-0.90)	-0.002 (-1.35)
<i>Return on assets</i>	-0.254 <sup>***</sup> (-3.40)	-0.011 (-0.31)	-0.020 (-0.99)	-0.074 <sup>*</sup> (-1.79)
<i>Leverage</i>	-0.099 <sup>**</sup> (-2.16)	-0.046 <sup>*</sup> (-1.89)	0.023 <sup>*</sup> (1.73)	0.082 <sup>***</sup> (2.91)
<i>Cash ratio</i>	-0.041 (-0.062)	-0.052 (-1.48)	0.052 <sup>***</sup> (2.80)	0.030 (0.86)
<i>R&amp;D intensity</i>	-0.044 (-0.26)	-0.232 <sup>**</sup> (-2.30)	0.070 (1.56)	-0.034 (-0.31)
<i>Property ratio</i>	0.153 <sup>***</sup> (3.57)	0.054 <sup>**</sup> (2.41)	0.026 <sup>*</sup> (1.75)	0.018 (0.73)
<i>Sales growth</i>	0.001 <sup>***</sup> (7.30)	-0.001 <sup>***</sup> (-9.29)	0.002 <sup>***</sup> (76.87)	0.000 <sup>***</sup> (15.59)
<i>Abnormal return</i>	0.951 (0.43)	0.216 (0.12)	0.280 (0.40)	0.185 (0.12)
<i>Firm risk</i>	0.538 (-1.05)	-0.427 (-1.25)	-0.232 (-1.12)	-0.470 (-1.31)
<i>Turnover</i>	-0.216 <sup>***</sup> (-3.86)	-0.141 <sup>***</sup> (-4.20)	0.021 (1.06)	-0.141 <sup>***</sup> (-4.07)
<i>Delaware inc.</i>	0.564 <sup>***</sup> (9.07)	0.047 <sup>*</sup> (1.84)	0.191 <sup>***</sup> (6.00)	0.168 <sup>***</sup> (4.04)
<i>State GDP growth</i>	-0.459 (-1.31)	0.187 (1.43)	-0.062 (-0.56)	-0.306 <sup>*</sup> (-1.91)
<i>Political balance</i>	0.074 (1.14)	-0.050 <sup>*</sup> (-1.78)	0.004 (0.24)	-0.163 <sup>***</sup> (-5.56)
<i>Strength of CNCs</i>	0.025 (1.38)	0.007 (0.87)	-0.007 (-1.44)	0.021 <sup>**</sup> (2.07)
<i>CEO ownership</i>	-0.176 (-1.16)	-0.207 <sup>**</sup> (-2.32)	0.023 (0.60)	-0.244 <sup>***</sup> (-3.15)
<i>Institutional ownership</i>	-0.067 <sup>**</sup> (-2.11)	0.030 <sup>*</sup> (1.69)	0.025 <sup>**</sup> (1.97)	0.034 <sup>*</sup> (1.68)
Firm & Year FE	Yes	Yes	Yes	Yes
Observations	28,852	28,852	28,852	28,852
Adjusted R <sup>2</sup>	0.838	0.685	0.758	0.885

This table reports the difference-in-difference estimates from OLS regressions of antitakeover provisions on IDD adoption by state courts. All regressions include firm and year fixed effects. Standard errors are clustered at the state and year level. <sup>\*\*\*</sup>, <sup>\*\*</sup>, and <sup>\*</sup> indicate significance at the 1%, 5%, and 10% levels. All variables are defined in Appendix C.

**Table 3**  
**Pre- and post-trend analysis of IDD and categories of antitakeover provisions**

	Takeover Defenses	Compensation	State Laws	Other
	(1)	(2)	(3)	(4)
<i>IDD</i> <sup>-3</sup>	0.038 (0.91)	-0.024 (-1.10)	-0.003 (-0.38)	0.017 (-0.82)
<i>IDD</i> <sup>-2</sup>	0.029 (0.70)	-0.003 (-0.12)	-0.011 (-1.28)	0.009 (0.41)
<i>IDD</i> <sup>-1</sup>	-0.012 (-0.48)	0.005 (0.33)	-0.017** (-2.40)	-0.003 (-0.18)
<i>IDD</i> <sup>0</sup>	0.093*** (2.68)	0.026* (1.67)	-0.008 (-1.06)	-0.004 (-0.20)
<i>IDD</i> <sup>+1</sup>	0.051* (1.75)	0.017 (1.06)	-0.013** (-1.99)	0.011 (0.52)
<i>IDD</i> <sup>+2</sup>	0.056 (1.23)	0.018 (1.01)	-0.007 (-0.92)	0.010 (0.48)
<i>IDD</i> <sup>3+</sup>	0.118*** (3.28)	-0.010 (-0.80)	-0.008 (-1.31)	0.010 (0.72)
Firm & Year FE	Yes	Yes	Yes	Yes
Observations	28,852	28,852	28,852	28,852
Adjusted R <sup>2</sup>	0.838	0.685	0.758	0.885

This table reports difference-in-difference estimates from regressions of antitakeover provisions on IDD adoption. We include seven indicator variables (*IDD*<sup>-3</sup>, *IDD*<sup>-2</sup>, *IDD*<sup>-1</sup>, *IDD*<sup>0</sup>, *IDD*<sup>+1</sup>, *IDD*<sup>+2</sup>, *IDD*<sup>3+</sup>) to capture pre- and post-IDD adoption trends. All regressions include firm and year fixed effects with standard errors clustered at the state and year level. \*\*\*, \*\*, and \* indicate 1%, 5%, and 10% significance levels. We define variables in Appendix C.



**Table 4**  
**IDD and Takeover Defenses**

	Written consent	Classified board	Blank check	Directors' duties	Silver parachute	Pension parachute	Unequal voting	Special meeting	Super- majority	Poison pill	Fair price
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<i>IDD</i>	0.036*** (3.76)	0.015*** (3.49)	0.012*** (2.77)	0.008*** (3.60)	0.008*** (4.22)	0.007*** (2.96)	0.004** (2.34)	0.022 (1.17)	0.000 (0.03)	-0.011 (-1.37)	-0.011*** (-3.11)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	28,852	28,852	28,852	28,852	28,852	28,852	28,852	28,852	28,852	28,852	28,852
Adjusted R <sup>2</sup>	0.670	0.903	0.828	0.935	0.716	0.739	0.786	0.500	0.885	0.775	0.919

This table reports the difference-in-difference estimates from OLS regressions of individual antitakeover provisions on IDD adoption by state courts. All regressions include firm and year fixed effects. Standard errors are clustered at the state and year level. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels. All variables are defined in Appendix C.

**Table 5**  
**Probability of being acquired**

	1-12 mos.	1-24 mos.	1-36 mos.	1-48 mos.	1-60 mos.
	(1)	(2)	(3)	(4)	(5)
<i>IDD × Defense Up</i>	-0.055 <sup>***</sup> (-3.08)	-0.043 <sup>*</sup> (-1.94)	-0.058 <sup>**</sup> (-2.25)	-0.063 <sup>*</sup> (-1.88)	-0.038 <sup>*</sup> (-2.23)
<i>IDD × Defense Not Up</i>	-0.004 (-0.42)	-0.015 (-1.06)	-0.012 (-0.69)	-0.009 (-0.66)	-0.009 (-0.86)
<i>F-test: <math>\beta_1 = \beta_2</math></i>	7.22 <sup>**</sup>	1.20	3.08 <sup>*</sup>	2.27	2.11
Controls	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Region × Year FE	Yes	Yes	Yes	Yes	Yes
Observations	25,127	25,127	25,127	25,127	25,127
Adjusted R <sup>2</sup>	0.244	0.456	0.591	0.697	0.775

This table reports regression estimates of the probability of being acquired within 1 to 5 years (i.e., 1 to 60 months) after partitioning firms based on changes in takeover defense provisions. Defense Up takes the value of one if the firm experiences an increase in the total value of Takeover Defenses as compared to the prior year. The variable Defense Not Up is equal to  $(1 - \text{Defense Up})$ . The IDD indicator takes the value of one if IDD is adopted by a firm's headquarter state in the year of IDD adoption. All regressions include firm and region × year fixed effects. Standard errors are clustered at the state and year level. <sup>\*\*\*</sup>, <sup>\*\*</sup>, and <sup>\*</sup> indicate significance at the 1%, 5%, and 10% levels. All variables are defined in Appendix C.

**Table 6**  
**Cross-sectional partitions**

	Number of rivals	Strength of CNCs	Knowledge workers	R&D intensity	Intangible asset intensity	CEO tenure	Block holders	CEO delta
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>IDD × High number of rivals</i>	0.198 <sup>***</sup> (3.64)	0.163 <sup>***</sup> (4.03)						
<i>IDD × Low number of rivals</i>	0.080 <sup>**</sup> (2.53)	-0.087 <sup>**</sup> (-2.49)						
<i>IDD × High innovation</i>			0.232 <sup>***</sup> (4.39)	0.122 <sup>***</sup> (3.55)	0.147 <sup>***</sup> (3.47)			
<i>IDD × Low innovation</i>			0.050 <sup>*</sup> (1.67)	0.038 (1.02)	0.067 <sup>**</sup> (2.18)			
<i>IDD × High entrenchment</i>						0.042 (1.16)	0.073 (1.39)	0.082 <sup>**</sup> (2.55)
<i>IDD × Low entrenchment</i>						0.089 <sup>**</sup> (2.57)	0.088 <sup>**</sup> (2.33)	0.068 (1.56)
<i>F-test: <math>\beta_1 = \beta_2</math></i>	6.45 <sup>**</sup>	22.51 <sup>***</sup>	22.36 <sup>***</sup>	7.40 <sup>***</sup>	8.68 <sup>***</sup>	2.07	0.20	0.16
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	28,852	28,852	28,852	28,852	28,852	28,852	28,852	28,852
Adjusted R <sup>2</sup>	0.838	0.838	0.838	0.838	0.838	0.828	0.832	0.830

This table reports the difference-in-difference estimates from OLS regressions of takeover defense provisions on IDD adoption by state courts. In this regression,  $\beta_1$  ( $\beta_2$ ) is the coefficient on the interaction of *IDD × High* (*IDD × Low*) indicator. All regressions include firm and year fixed effects. Standard errors are clustered at the state and year level. <sup>\*\*\*</sup>, <sup>\*\*</sup>, and <sup>\*</sup> indicate significance at the 1%, 5%, and 10% levels. All variables are defined in Appendix C.

**Table 7**  
**Takeover premiums**

Panel A: Announcement returns over [-5,+5]				
	Value weighted		Equal weighted	
	(1)	(2)	(3)	(4)
<i>IDD × Defense Up</i>	0.148*	0.156*	0.144*	0.154*
	(1.82)	(1.90)	(1.76)	(1.86)
<i>IDD × Defense Not Up</i>	-0.007	-0.013	-0.008	-0.013
	(-0.34)	(-0.62)	(-0.37)	(-0.64)
<i>F-test: <math>\beta_1 = \beta_2</math></i>	3.55*	4.18**	3.32*	3.99*
Controls	Yes	Yes	Yes	Yes
Region × Year FE	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	Yes
Observations	707	704	707	704
Adjusted R <sup>2</sup>	0.148	0.179	0.150	0.175

  

Panel B: Announcement returns over [-63,+126]				
	Value weighted		Equal weighted	
	(1)	(2)	(3)	(4)
<i>IDD × Defense Up</i>	0.174	0.165	0.114	0.108
	(1.12)	(1.04)	(0.72)	(0.67)
<i>IDD × Defense Not Up</i>	-0.013	-0.020	0.008	-0.002
	(-0.42)	(-0.66)	(0.22)	(-0.07)
<i>F-test: <math>\beta_1 = \beta_2</math></i>	1.40	1.35	0.44	0.46
Controls	Yes	Yes	Yes	Yes
Region × Year FE	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	Yes
Observations	707	704	707	704
Adjusted R <sup>2</sup>	0.263	0.293	0.275	0.302

This table reports regression estimates of the announcement returns (i.e., takeover premiums) over the window [-5,+5] (Panel A) and [-63,+126] (Panel B) surrounding the acquisition announcement date for firms acquired within 2 years after partitioning firms based on changes in Takeover Defenses. Defense Up takes the value of one if the firm experiences an increase in the total value of Takeover Defenses as compared to the prior year. The variable Defense Not Up is equal to  $(1 - \text{Defense Up})$ . The IDD indicator takes the value of one if IDD is adopted by a firm's headquarter state in the year of IDD adoption. All regressions include industry and region × year fixed effects. Standard errors are clustered at the state and year level. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels. All variables are defined in Appendix C.

**Table 8**  
**Long-term innovation post-IDD**

Panel A: Patent count					
	Patents 1-12 mos.	Patents 1-24 mos.	Patents 1-36 mos.	Patents 1-48 mos.	Patents 1-60 mos.
	(1)	(2)	(3)	(4)	(5)
<i>IDD</i> × <i>Defense Up</i>	0.176** (2.48)	0.128** (2.10)	0.124** (2.07)	0.049 (0.80)	0.104* (1.66)
<i>IDD</i> × <i>Defense Not Up</i>	0.017 (0.43)	-0.002 (-0.05)	-0.002 (-0.05)	-0.022 (-0.73)	-0.029 (-0.99)
<i>F</i> -test: $\beta_1 = \beta_2$	6.20**	5.44**	5.06**	1.62	5.02**
Controls	Yes	Yes	Yes	Yes	Yes
Firm & Year FE	Yes	Yes	Yes	Yes	Yes
Observations	8,917	9,626	9,667	9,523	9,287
Adjusted R <sup>2</sup>	0.854	0.884	0.903	0.917	0.927

  

Panel B: Patent citations					
	Patent citations 1-12 mos.	Patent citations 1-24 mos.	Patent citations 1-36 mos.	Patent citations 1-48 mos.	Patent citations 1-60 mos.
	(1)	(2)	(3)	(4)	(5)
<i>IDD</i> × <i>Defense Up</i>	0.191** (2.49)	0.099 (1.51)	0.122* (1.90)	0.052 (0.85)	0.113* (1.74)
<i>IDD</i> × <i>Defense Not Up</i>	0.025 (0.60)	0.005 (0.15)	0.005 (0.14)	-0.013 (-0.41)	-0.021 (-0.69)
<i>F</i> -test: $\beta_1 = \beta_2$	5.69**	2.62	4.20**	1.38	4.90**
Controls	Yes	Yes	Yes	Yes	Yes
Firm & Year FE	Yes	Yes	Yes	Yes	Yes
Observations	8,917	9,626	9,667	9,523	9,287
Adjusted R <sup>2</sup>	0.845	0.882	0.902	0.917	0.927

**Table 8 (continued)**

Panel C: Trade secrets					
	Count 1-12 mos.	Count 1-24 mos.	Count 1-36 mos.	Count 1-48 mos.	Count 1-60 mos.
	(1)	(2)	(3)	(4)	(5)
<i>IDD</i> × <i>Defense Up</i>	0.083** (2.43)	0.103*** (2.64)	0.103** (2.42)	0.040 (0.88)	0.044 (1.00)
<i>IDD</i> × <i>Defense Not Up</i>	0.037* (1.67)	0.050* (1.84)	0.027 (0.85)	−0.001 (−0.02)	−0.016 (−0.50)
<i>F</i> -test: $\beta_1 = \beta_2$	2.32	2.84*	5.01**	1.46	3.21*
Controls	Yes	Yes	Yes	Yes	Yes
Firm & Year FE	Yes	Yes	Yes	Yes	Yes
Observations	19,639	19,639	18,581	17,518	16,427
Adjusted R <sup>2</sup>	0.513	0.612	0.691	0.741	0.785

Panel D: Effect of *IDD* on innovation

	Patent Count 1-12 months (1)	Patent Citation 1-12 months (2)	Trade Secret Count 1-12 months (3)
<i>IDD</i>	−0.005 (−0.13)	0.02 (0.06)	0.053** (2.43)
Controls	Yes	Yes	Yes
Firm & Year FE	Yes	Yes	Yes
Observations	10,073	10,073	21,743
Adjusted R <sup>2</sup>	0.842	0.832	0.520

This table reports the difference-in-differences estimates from OLS regressions of long-run innovation after partitioning firms based on changes in takeover defense provisions. *Defense Up* takes the value of one if the firm experiences an increase in the total value of Takeover Defenses as compared to the prior year. The variable *Defense Not Up* is equal to  $(1 - \textit{Defense Up})$ . In this regression,  $\beta_1$  ( $\beta_2$ ) is the coefficient on the interaction of *IDD* × *Defense Up* (*IDD* × *Defense Not Up*) indicator. We report the number of patents in Panel A and the citation-weighted patent value in Panel B. Since ISS data on takeover defense provisions start in 1990, all tests are for the period 1991 to 2011. In Panel C, the dependent variable is the natural log of one plus the number of times a firm references “trade secrets” or “trade secrecy” in its annual SEC Form 10-K filing. These tests are for the period 1997 to 2011. Panel D presents the effect of *IDD* per se on patents and trade secrets. All regressions include firm and year fixed effects. Standard errors are clustered at the state and year level. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels. All variables are defined in Appendix C.

## Appendix A: Staggered court decisions of the Inevitable Disclosure Doctrine

State	Precedent-setting case	Date	Decision
Arkansas	<i>Southwestern Energy Co. v. Eickenhorst</i> , 955 F. Supp. 1078 (W.D. Ark. 1997)	3/18/1997	Adopt
Connecticut	<i>Branson Ultrasonics Corp. v. Stratman</i> , 921 F. Supp. 909 (D. Conn. 1996)	2/28/1996	Adopt
Delaware	<i>E.I. duPont de Nemours &amp; Co. v. American Potash &amp; Chem. Corp.</i> , 200 A.2d 428 (Del. Ch. 1964)	5/5/1964	Adopt
Florida	<i>Fountain v. Hudson Cush-N-Foam Corp.</i> , 122 So. 2d 232 (Fla. Dist. Ct. App. 1960)	7/11/1960	Adopt
	<i>Del Monte Fresh Produce Co. v. Dole Food Co. Inc.</i> , 148 F. Supp. 2d 1326 (S.D. Fla. 2001)	5/21/2001	Reject
Georgia	<i>Essex Group Inc. v. Southwire Co.</i> , 501 S.E.2d 501 (Ga. 1998)	6/29/1998	Adopt
Illinois	<i>Teradyne Inc. v. Clear Communications Corp.</i> , 707 F. Supp. 353 (N.D. 111. 1989)	2/9/1989	Adopt
Indiana	<i>Ackerman v. Kimball Int'l Inc.</i> , 652 N.E.2d 507 (Ind. 1995)	7/12/1995	Adopt
Iowa	<i>Uncle B's Bakery v. O'Rourke</i> , 920 F. Supp. 1405 (N.D. Iowa 1996)	4/1/1996	Adopt
Kansas	<i>Bradbury Co. v. Teissier-duCros</i> , 413 F. Supp. 2d 1203 (D. Kan. 2006)	2/2/2006	Adopt
Massachusetts	<i>Bard v. Intoccia</i> , 1994 U.S. Dist. LEXIS 15368 (D. Mass. 1994)	10/13/1994	Adopt
Michigan	<i>Allis-Chalmers Manuf. Co. v. Continental Aviation &amp; Eng. Corp.</i> , 255 F. Supp. 645 (E.D. Mich. 1966)	2/17/1966	Adopt
	<i>CMI Int'l, Inc. v. Internet Int'l Corp.</i> , 649 N.W.2d 808 (Mich. Ct. App. 2002)	4/30/2002	Reject
Minnesota	<i>Surgidev Corp. v. Eye Technology Inc.</i> , 648 F. Supp. 661 (D. Minn. 1986)	10/10/1986	Adopt
Missouri	<i>H&amp;R Block Eastern Tax Servs. Inc. v. Enchura</i> , 122 F. Supp. 2d 1067 (W.D. Mo. 2000)	11/2/2000	Adopt
New Jersey	<i>Nat'l Starch &amp; Chem. Corp. v. Parker Chem. Corp.</i> , 530 A.2d 31 (N.J. Super. Ct. 1987)	4/27/1987	Adopt
New York	<i>Eastman Kodak Co. v. Powers Film Prod.</i> , 189 A.D. 556 (N.Y.A.D. 1919)	12/5/1919	Adopt
North Carolina	<i>Travenol Laboratories Inc. v. Turner</i> , 228 S.E.2d 478 (N.C. Ct. App. 1976)	6/17/1976	Adopt
Ohio	<i>Procter &amp; Gamble Co. v. Stoneham</i> , 747 N.E.2d 268 (Ohio Ct. App. 2000)	9/29/2000	Adopt
Pennsylvania	<i>Air Products &amp; Chemical Inc. v. Johnson</i> , 442 A.2d 1114 (Pa. Super. Ct. 1982)	2/19/1982	Adopt
Texas	<i>Rugen v. Interactive Business Systems Inc.</i> , 864 S.W.2d 548 (Tex. App. 1993)	5/28/1993	Adopt
	<i>Cardinal Health Staffing Network Inc. v. Bowen</i> , 106 S.W.3d 230 (Tex. App. 2003)	4/3/2003	Reject
Utah	<i>Novell Inc. v. Timpanogos Research Group Inc.</i> , 46 U.S.P.Q.2d 1197 (Utah D.C. 1998)	1/30/1998	Adopt
Washington	<i>Solutech Corp. Inc. v. Agnew</i> , 88 Wash. App. 1067 (Wash. Ct. App. 1997)	12/30/1997	Adopt

This table provides the dates of Inevitable Disclosure Doctrine (IDD) adoption or rejection based on state court decisions. See Klasa et al. (2018) for a full list of precedent-setting cases by state.

## Appendix B: Definitions of antitakeover provisions

This appendix describes the antitakeover provisions in the ISS database based on the categories used in the paper. The descriptions are based heavily on the definitions in Gompers et al. (2003) and Bebchuk et al. (2008). One can refer to these papers for more detailed definitions of the provisions.

### Takeover Defenses

*Limits to written consent:* a provision limiting shareholders' ability to act via written consent (as opposed to acting through a vote at the shareholders' meeting).

*Classified board:* a board in which directors are divided into separate classes (typically three) with each class being elected to overlapping terms.

*Blank check:* this is a type of preferred stock that, when authorized, gives the board broad discretion in establishing the stock's voting, dividend, and other rights when issued.

*Directors' duties:* a provision that permits the board to consider non-shareholder interests in evaluating a possible change in control.

*Silver parachute:* a severance agreement that provides benefits to a large number of firm employees in the event of firing, demotion, or resignation following a change in control.

*Pension parachute:* provisions that limit the ability of an acquirer from using surplus money in a pension plan to fund the acquisition.

*Unequal voting:* a provision by which voting power changes based on certain conditions.

*Limits to special meeting:* a provision limiting shareholders' ability to act by calling a special meeting (as opposed to waiting for the regularly scheduled shareholders' meeting).

*Supermajority:* requirement that requires more than a majority of shareholders to approve a merger.

*Poison pill:* a shareholder right that is triggered in the event of an unauthorized change in control that typically renders the target company financially unattractive or dilutes the voting power of the acquirer.

*Fair price:* a requirement that a bidder pays all shareholders a fair price, typically the highest price paid by a bidder prior to a tender offer being made.

### Compensation

*Golden parachutes:* a severance agreement that provides benefits to management/board members in the event of firing, demotion, or resignation following a change in control.

*Compensation plans:* a plan that accelerates benefits in the event of a change in control. Compensation plan data are not available in IRRC after 2006. The results for the Compensation category are similar when we restrict our tests to the relevant sample period.

### State Laws<sup>34</sup>

*Business combination law (net):* a law that limits the ability of an acquirer to conduct certain transactions with the acquired company post-acquisition.

<sup>34</sup>Unlike IDD, which is based on headquarter state, these state laws are based on incorporation state. Thus, we only examine the choice to opt-in or opt-out of state laws and present the net value (opt-in minus opt-out) when both are available.



## Appendix B: Definitions of antitakeover provisions (continued)

*Fair price law (net)*: the fair price law works similar to the firm-level provision.

*Control share acquisition law (net)*: These are similar to supermajority provisions. These laws require a majority of disinterested shareholders to vote on whether a newly qualifying large shareholder has voting rights.

*Cash out law (opt-out)*: a provision that enables shareholders to sell to a controlling shareholder, usually at the highest price recently paid by the controlling shareholder.

*Directors' duties (opt-out)*: the directors' duties laws allow similar expansion of constituencies when evaluating a takeover.

*Recapture of profits (opt-out)*: this law is similar to anti-greenmail provision, and it enables firms to recapture raiders' profit earned in the secondary market.

### Other

*Severance agreements*: a contract that ensures executives some income protection in the event of losing their positions.

*Director liabilities*: a provision that limits the personal liability of its directors.

*Director indemnification*: a charter or bylaw provision indemnifying the firm's officers and directors against certain legal expenses and judgments as a result of their conduct.

*Director indemnification contracts*: a contract with individual officers and directors promising indemnification against certain legal expenses and judgments as a result of their conduct.

*Limits to amend bylaws*: a provision that constrain shareholders' ability to amend the governing documents of the corporation. Common limitations include a supermajority vote requirement for bylaw amendments and the total elimination of the ability of shareholders to amend the bylaws.

*Limits to amend charter*: a provision that limits shareholders' ability to amend the governing documents of the corporation. A common limitation requires a supermajority vote for charter amendments.

*Cumulative voting*: a provision that permits shareholders to apportion the total number of votes they are entitled to cast in the election of directors in any fashion they desire. To be consistent with the rest of the provisions, i.e., such that higher values reflect lower shareholder power, we rescale this provision to have a higher value if this provision does not exist and call it Anti-cumulative voting.

*Secret ballot*: a system of voting that ensures management does not look at individual proxy cards. To be consistent with the rest of the provisions, i.e., such that higher values reflect lower shareholder power, we rescale this provision to have a higher value if this provision does not exist and call it Anti-secret ballot.

*Anti-greenmail*: a provision that prevents an entity from acquiring a block of stock in a company and selling it back to the company at an above-market price.

## Appendix C: Variable definitions

Variable	Definition
Abnormal return	The daily stock return of the firm's common stock less the returns of the CRSP equal-weighted index averaged over the year.
Blockholder	An indicator variable equal to one if the firm has at least one outside institutional owner holding more than 5% of outstanding shares in the Thomson Reuters 13F Institutional Holdings database.
Cash ratio	Cash and short-term investments divided by total assets, from Compustat.
CEO delta	The sensitivity of a CEO's wealth to stock price changes, measured as delta, or the change in the dollar value of the executive's stock and options for a 1% change in the stock price Execucomp following Coles et al. (2006).
CEO ownership	The percent of shares outstanding owned by the CEO excluding options from Execucomp divided by common shares outstanding from Compustat. Missing values are set to zero.
Delaware incorporation	An indicator variable which equals one if the firm is incorporated in Delaware, and zero otherwise.
Firm risk	The standard deviation of daily abnormal returns averaged over the year. Abnormal returns are calculated using the CRSP equal-weighted index.
Firm size	The natural log of the book value of total assets, from Compustat.
CEO tenure	The number of years the CEO has held their position, from Execucomp.
IDD	An indicator variable which equals one if the state recognizes the IDD, and zero otherwise.
IDD <sup>+/- n</sup>	The superscript denotes the number of years (n) before or after the state recognized the IDD.
Intangible asset intensity	Intangible assets divided by total assets, from Compustat. Intangible assets include items such as copyrights, engineering drawings, goodwill, licenses, patents, trademarks, computer software, etc.
Institutional ownership	The percent of shares outstanding owned by institutions with at least \$100 million in equity securities.
Knowledge workers	The fraction of knowledge workers among all workers in a firm, from the Integrated Public Use Microdata Series (IPUMS) database.

## Appendix C: Continued

Variable	Definition
Leverage	Total debt divided by total assets, from Compustat.
Market-to-book	Market value of equity and debt divided by total assets, from Compustat.
Number of rivals	The number of rivals is the number of Compustat firms headquartered in the same state that operate in the same 3-digit Standard Industrial Classification (SIC) code during the year.
Patent citations	The yearly number of forward patent citations scaled by book value of assets.
Patent count	The yearly number of patents.
Political balance	The proportion of a state's congress members in the U.S. House of Representatives that belong to the Democratic Party, which captures the political leaning in the state. <sup>35</sup>
Property ratio	The gross property, plant and equipment (PPE) value divided by total assets. We use the net PPE value for observations with missing gross PPE in Compustat.
R&D Intensity	The research and development (R&D) expenses divided by total assets, from Compustat. Missing values of R&D are set to zero.
Return on assets	Operating income divided by total assets, from Compustat.
Sales growth	The average growth in total sales over the past three years, from Compustat.
State GDP growth	The one-year growth rate of the annual state gross domestic product (GDP), from the Bureau of Economic Analysis.
Strength of CNCs	The Bird and Knopf (2015) index of the enforceability of covenants not to compete. The index takes the value of 0 to 9, where larger values represent a higher level of noncompetition agreement enforceability in each state.
Trade secrets	The number of times a firm references "trade secrets" or "trade secrecy" in its annual SEC Form 10-K filing.
Turnover	The monthly trading volume in shares divided by the number of shares outstanding in CRSP averaged over the year.

<sup>35</sup> For firms headquartered in the District of Columbia (DC), we set this variable equal to one. Although DC residents have no voting representation in the U.S. House of Representatives, their citizens always elect a Democratic non-voting delegate to the U.S. House of Representatives during our sample period.

## Internet Appendix

**Table IA1**

Takeover likelihood

	(1)	(2)	(3)	(4)	(5)	(6)
<i>IDD</i>	0.007** (0.032)	0.009** (0.011)	0.007 (0.005) <i>p</i> =0.122	0.007 (0.005) <i>p</i> =0.117	0.015** (0.007) <i>p</i> =0.050	0.016** (0.007) <i>p</i> =0.036
Sample Period	1980-2013	1980-2013	1990-2011	1990-2011	1990-2011	1990-2011
Controls	No	Yes	No	Yes	No	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Region $\times$ Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	122,367	122,367	28,852	28,852	28,852	28,852
Adjusted R <sup>2</sup>	0.031	0.035	0.153	0.154	0.387	0.388

This table reports regression estimates of the probability of being acquired. Columns 1-2 report the probability of being acquired in a given year from Table 3 in Chen et al. (2018). Columns 3-4 (5-6) report the probability of being acquired within 12 months (24 months) using our sample period 1990 to 2011. The *IDD* indicator takes the value of one if *IDD* is adopted by a firm's headquarter state in the year of *IDD* adoption. All regressions include firm and region  $\times$  year fixed effects. Standard errors are clustered at the state level are reported in parentheses. Two-tailed *p*-values are reported in columns 3-6 \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels. Columns (3) and (4) include control variables from equation (1). All variables are defined in Appendix C.

**Table IA2**  
Entropy balancing

Panel A: Firm characteristics						
	IDD Firms			Non-IDD Firms		
	(1) Mean	(2) Variance	(3) Skewness	(4) Mean	(5) Variance	(6) Skewness
<b>Before balancing</b>						
<i>Firm size</i>	7.68	3.02	0.53	7.40	2.54	0.39
<i>Market to book</i>	1.40	4.39	60.71	1.44	1.77	4.75
<i>Return on assets</i>	0.08	0.01	-1.85	0.08	0.01	-2.74
<i>Leverage</i>	0.20	0.03	1.92	0.19	0.03	1.36
<i>Cash ratio</i>	0.12	0.02	2.21	0.14	0.03	1.71
<i>R&amp;D intensity</i>	0.02	0.00	4.41	0.03	0.00	4.84
<i>Property ratio</i>	0.51	0.16	0.95	0.53	0.18	0.90
<i>Sales growth</i>	0.13	2.67	112.60	0.21	107.40	118.90
<i>Abnormal return</i>	0.00	0.00	8.39	0.00	0.00	-2.69
<i>Firm risk</i>	0.02	0.00	4.31	0.02	0.00	3.39
<i>Turnover</i>	0.15	0.02	3.69	0.18	0.03	2.89
<i>Delaware inc.</i>	0.55	0.25	-0.18	0.58	0.24	-0.34
<i>State GDP growth</i>	0.05	0.00	-0.32	0.05	0.04	-0.99
<i>Political balance</i>	0.57	0.03	0.40	0.50	0.04	-0.03
<i>Strength of CNCs</i>	4.65	1.62	0.35	3.25	6.66	0.26
<i>CEO ownership</i>	0.02	0.00	5.82	0.02	0.00	5.19
<i>Institutional ownership</i>	0.38	0.14	0.20	0.39	0.15	0.21
<b>After balancing</b>						
<i>Firm size</i>	7.68	3.02	0.52	7.68	3.02	0.52
<i>Market to book</i>	1.40	4.39	60.71	1.40	4.39	60.71
<i>Return on assets</i>	0.08	0.01	-1.85	0.08	0.01	-1.85
<i>Leverage</i>	0.20	0.03	1.92	0.20	0.03	1.92
<i>Cash ratio</i>	0.12	0.02	2.21	0.12	0.02	2.21
<i>R&amp;D intensity</i>	0.02	0.00	4.41	0.02	0.00	4.41
<i>Property ratio</i>	0.51	0.16	0.95	0.51	0.16	0.95
<i>Sales growth</i>	0.13	2.67	112.60	0.13	2.67	112.60
<i>Abnormal return</i>	0.00	0.00	8.39	0.00	0.00	8.39
<i>Firm risk</i>	0.02	0.00	4.31	0.02	0.00	8.16
<i>Turnover</i>	0.15	0.02	3.69	0.15	0.02	3.69
<i>Delaware inc.</i>	0.55	0.25	-0.18	0.55	0.25	-0.18
<i>State GDP growth</i>	0.05	0.00	-0.32	0.05	0.00	-0.32
<i>Political balance</i>	0.57	0.03	0.40	0.57	0.03	0.40
<i>Strength of CNCs</i>	4.65	1.62	0.35	4.65	1.62	-0.83
<i>CEO ownership</i>	0.02	0.00	5.82	0.02	0.00	5.16
<i>Institutional ownership</i>	0.38	0.14	0.20	0.38	0.14	0.20

This table presents the difference-in-difference estimates from OLS regressions of antitakeover provisions on IDD adoption by state courts in an entropy balanced sample of treatment and control firms. Panel A compares firm characteristic of IDD and non-IDD firms before and after entropy balancing the first, second, and third moments. Panel B reports the OLS regressions results, which include firm and year fixed effects. Standard errors are clustered at the state and year level. \*\*\*, \*\*, and \* indicate significance at the 1%, 5% and 10% levels. All variables are defined in Appendix C.

Table IA2 (continued)

Panel B: Entropy-balanced regression	
	Takeover Defenses
<i>IDD</i>	0.112* (1.74)
<i>Firm size</i>	0.110 (1.51)
<i>Market to book</i>	0.009* (1.90)
<i>Return on assets</i>	-0.334* (-1.76)
<i>Leverage</i>	-0.156 (-0.91)
<i>Cash ratio</i>	-0.075 (-0.39)
<i>R&amp;D intensity</i>	-0.138 (-0.34)
<i>Property ratio</i>	0.121 (1.07)
<i>Sales growth</i>	0.005 (0.56)
<i>Abnormal return</i>	2.708 (0.84)
<i>Firm risk</i>	-1.563 (-0.96)
<i>Turnover</i>	-0.213 (-1.25)
<i>Delaware inc.</i>	0.563*** (2.87)
<i>State GDP growth</i>	-0.474 (-0.95)
<i>Political balance</i>	0.188 (1.23)
<i>Strength of CNCs</i>	0.000 (0.01)
<i>CEO ownership</i>	-0.621 (-0.92)
<i>Institutional ownership</i>	-0.062 (-0.87)
Firm & Year FE	Yes
Observations	28,852
Adjusted R <sup>2</sup>	0.857

**Table IA3**

Adopting and rejecting IDD and categories of antitakeover provisions

	Takeover Defenses	Compensation	State Laws	Other
	(1)	(2)	(3)	(4)
<i>IDD</i>	0.057* (1.70)	-0.015 (-1.04)	-0.016** (-2.14)	-0.006 (-0.36)
<i>IDD reject</i>	-0.080** (-2.52)	-0.008 (-0.45)	-0.013 (-1.29)	-0.013 (-0.58)
Controls	Yes	Yes	Yes	Yes
Firm & Year FE	Yes	Yes	Yes	Yes
Observations	28,852	28,852	28,852	28,852
Adjusted R <sup>2</sup>	0.838	0.685	0.758	0.885

This table reports the difference-in-difference estimates from OLS regressions of antitakeover provisions on IDD adoption and rejection by state courts. All regressions include firm and year fixed effects. Standard errors are clustered at the state and year level. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels. *IDD reject* is a dummy variable that equals one for firms in states which considered and explicitly rejected the IDD, and zero otherwise. In addition to the states that rejected IDD after prior adoption (Texas, Michigan, and Florida), we identify four states that explicitly reject IDD having never adopted it from Wiesner (2012). These include California in *Whyte v. Schlage Lock Co.*, 125 Cal. Rptr. 2d 277, 294 (4th Dist. 2002) on September 12, 2002; Louisiana in *Tubular Threading, Inc. v. Scandalianto*, 443 So. 2d 712, 715 (La. Ct. App.1983) on December 8, 1983; Maryland in *LeJeune v. Coin Acceptors*, 849 A.2d 451, 471 (Md. 2004) on May 13, 2004; and Virginia in *Gov. Tech. Servs., Inc. v. IntelliSys Tech. Corp.*, WL 1499548, 1 (Va. Cir. Ct.) on October 2, 1999. All other variables are defined in Appendix C of the paper.