

Identifying Corporate Governance Effects: The Case of Universal Demand Laws

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ABSTRACT

An emerging line of research finds that firms incorporated in Universal Demand (UD) law adopting states experience an increase in the use of entrenchment provisions. Our investigation shows that the empirical link between UD laws and management entrenchment is influenced by a small number of firms adopting antitakeover provisions after substantial long-term drops in value. Using hand-collected data, we provide case-by-case evidence that the vast majority of changes in the use entrenchment provisions are in fact announced before the enactment of UD laws and cannot be causally attributed to UD laws. Our granular analysis has broad implications for law and finance research.

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1. Introduction

Index constructs and identifiers are regularly utilized in empirical corporate governance research. They are popular. The papers putting forth governance indexes have been collectively cited over 13,000 times (Bebchuk et al. 2009; Gompers et al. 2003). The use of legal changes as plausibly exogenous sources of variation in the economic determinants of corporate governance is also common (e.g., Cuñat et al. 2012; Karpoff et al. 2017). State antitakeover laws, particularly business combination laws, are often used as exogenous identifiers to assess corporate governance effects (e.g., Cain et al. 2017). Despite their popularity, there is a growing body of literature questioning the interpretation of tests that use legal changes for identification (e.g., Klausner 2013; Catan and Kahan 2016; Karpoff and Wittry 2018).

In this paper, we contribute to the debate by examining the adoption of Universal Demand (UD) laws as an increasingly popular proxy for exogenous variation in corporate governance mechanisms. UD laws are enacted by 23 states between 1989 and 2005 and require that shareholders make a demand on the board before suing for breach of fiduciary duty or other derivative actions. Because the board can refuse the demand or otherwise prosecute the case, or decline to prosecute, academics have theorized that UD laws decrease the ability of shareholders to litigate and effectively monitor the board. Since UD laws are exogenously imposed by the state, they have the potential to address the issue of endogeneity in the relation between corporate governance and litigation risk.

In a novel paper, Appel (2019) first deployed the enactment of UD laws as a plausibly exogenous source of variation in the use of entrenchment provisions commonly opposed by shareholders. Appel's empirical investigation zeroes in on variation in the widely-used entrenchment index (E-Index), which captures the sum of provisions restricting shareholder voting power and antitakeover provisions (Bebchuk et al. 2009). The key finding is that the staggered enactment of UD laws across adopting states is associated with a significant increase in the E-Index. Prior work interprets this finding as *prima facie* evidence of a causal link between shareholder litigation rights and corporate governance.

A fast-growing stream of studies in corporate finance and accounting relies on the adoption of UD laws to identify cause-and-effect links between management entrenchment and various firm outcomes. Among these studies Masulis et al. (2020) find that the quality of nominated outside directors improves for firms incorporated in UD law adopting states. Chu and Zhao (2021) find that firms in states adopting UD laws experienced improved corporate takeover efficiency. Foroughi et al. (2021) use the staggered adoption of UD laws to identify causal peer effects in the adoption of antitakeover provisions. With respect to corporate financial reporting, Bourveau et al. (2018) find that corporate disclosure increases in firms incorporated in states adopting UD laws. Huang et al. (2020) provide evidence the UD law adoption leads to a decrease in managers' issuance of earnings warnings, especially among firms facing higher litigation risk prior to the adoption. Manchiraju et al. (2021) find an increase (decrease) in financial reporting conservatism post-UD adoption for firms with high (low) corporate governance quality. Turning to corporate investment, Lin et al. (2020) provide evidence that firms incorporated in UD law adopting states increased their R&D spending after the passage of the laws and conclude that regulation of frivolous shareholder litigation can encourage innovation. Other corporate finance studies argue that firms located in states adopting UD laws experience an increase in cost of debt (Ni and Yin 2018) and cost of equity (Houston et al. 2018).

A common thread across prior studies is that UD laws had a direct effect on management entrenchment. If the direct link between the adoption of UD laws and management entrenchment is broken, prior evidence on the cause-and-effect link between UD laws and various firm outcomes becomes questionable. As we discuss in the institutional background section, the theoretical rationale for UD laws' effect on the use of entrenchment provisions is ambiguous. The intended effect of UD laws is to eliminate frivolous litigation that imposes undue litigation costs. Therefore, UD laws should have no effect on management entrenchment since they are purported to eliminate only frivolous suits.

The stream of studies using UD laws has relied on the theory that these laws make fiduciary duty lawsuits harder to prosecute, and thereby allow boards to escape monitoring and to relax corporate governance measures. However, this theory belies the reality that, with or without UD laws, breach of fiduciary duty lawsuits rarely, if ever, result in liability

for directors and officers (Black et al. 2006). Secondly, fiduciary duties cover the duty of loyalty and care, affecting how a board considers a matter and whether and how a director can engage in a conflicted interest transaction. Even if UD laws did result in less fiduciary-duty litigation, it is unclear why a relaxation of fiduciary duties would affect the use of entrenchment provisions and antitakeover mechanisms.

Given the ambiguous *a priori* effects, we raise the possibility that prior evidence on the association between UD laws and the use of entrenchment provisions is confounded by measurement and identification issues. As an alternative explanation, we explore the limitations in the ISS database and the resulting misclassification of pre-event changes in the E-Index as post-event changes. Our paper addresses these issues head-on. To identify the effect of the adoption of UD laws on the use of entrenchment provisions, we implement a standard two-group, two-period (2×2) difference-in-differences (DID) separately for each UD law adopting state. Using precise UD law adoption dates, our research design compares treated and control firms in terms of the pre-post change in their E-Index before and after the adoption of UD laws separately for each adopting state.

The treated group includes firms incorporated in UD law adopting states with coverage in the Institutional Shareholder Services (ISS) legacy database between 1990 and 2006. The vast majority of treated firms are in-state incorporations; that is, they are incorporated in the state of the headquarters location. The control group includes firms with ISS coverage incorporated in states that never adopted UD laws. An important feature of the setting is that the control group is dominated by firms incorporated in Delaware. The state of Delaware never adopted UD laws and dominates the market for out-of-state incorporations. With respect to the pre-post comparisons, we ensure that our design hews closely to the timeline of the ISS survey release dates. Specifically, we collect data on the use of entrenchment provisions and compute the change in the E-Index between the last ISS survey before the UD law effective date and the first ISS survey after the UD law effective date. Our design further ensures that the control group of never treated firms is not contaminated by comparisons of later versus earlier treated firms.

Our analysis reveals that between 1990 and 2006 there are 110 unique firms incorporated in UD law adopting states and have coverage between the consecutive ISS

surveys centered on the UD law effective date of each adopting state. The small set of treated firms is consistent with the dominance of Delaware in the market for out-of-state incorporations. Importantly, out of the 110 treated firms, we find that only 20 cases appear to experience a pre-post increase in their E-Index, with 10 out of those 20 cases incorporated in Pennsylvania.

Next, we probe the adoption of individual entrenchment provisions across the 20 treated firms that seemingly experienced an increase in their E-index after the adoption of UD laws. The ISS survey data suggest that these 20 treated firms collectively adopted a total of 23 entrenchment provisions, with poison pill and golden parachute antitakeover provisions accounting for 21 out of the 23 provisions. However, an important limitation of the ISS legacy database is that there is significant lag between consecutive ISS surveys that surround the UD law effective date in each adopting state. In addition, the ISS legacy database does not provide information about the exact adoption dates of individual entrenchment provisions across firms. Put differently, while one can measure changes in the E-Index between consecutive ISS surveys, the ISS legacy database does *not* allow for the identification of the exact timing of such changes.

An immediate implication of the limitations of the ISS survey data is that pre-event changes in the use of entrenchment provisions could be misclassified as seemingly post-event changes in the E-Index. This is a key issue, since a prerequisite for the identification of a causal effect is that the change in entrenchment provisions among affected firms occurs after, not before, the UD law adoption date. To overcome this limitation, we hand-collect information on the exact adoption dates of individual entrenchment provisions across treated firms. For each case, we search SEC EDGAR and CapitalIQ for public filings associated with the adoption of entrenchment provisions, including annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and DEF14A definitive proxy statements.

Our case-by-case investigation sheds new light on measurement and identification issues in empirical research using the ISS legacy survey data. Recall that across the 20 treated firms with a seeming pre-post increase in their E-Index, the legacy data identify 23 entrenchment provisions adopted between consecutive ISS surveys. Strikingly, our case-by-

case investigation reveals that 16 out of the 23 entrenchment provisions were adopted at least four quarters *prior* to the enactment of UD laws. The evidence highlights the prevalence of the misclassification of *pre-event* changes in the use of entrenchment provisions as *post-event* changes in the E-index. In fact, the vast majority of changes in the E-Index among affected firms in UD law adopting states actually occurred well before the enactment of UD laws.

Starting with Appel's (2019) study, the stream of empirical studies in the UD law setting use a two-way fixed effect (TWFE) estimator with variation in the timing of treatment across treatment groups. Variation in the timing of treatment is due to the staggered adoption of UD laws across states. The staggered DID design departs from the simple 2×2 DID. Goodman-Bacon (2021) points out that in staggered DID designs the TWFE estimator is a weighted average of all possible 2×2 DID estimators in the data. The weights on each of these 2×2 estimators are proportional to group sizes and treatment variances. A critical issue with staggered DID designs is the use of already treated units as controls in comparisons with future treated units. Because already treated units act as controls in some 2×2 DID pairs, Goodman-Bacon (2021) shows that identification requires the additional assumption of time-invariant treatment effects. In applied settings, the assumption of time-invariant treatment effects is unlikely to hold and the TWFE estimator is generally biased (Baker et al. 2022). In contrast to the staggered DID design, our state-by-state, standard 2×2 DID estimator allows for heterogeneous treatment effects across UD law adopting states and is free of the problematic 2×2 DID comparisons that use already-treated firms as controls.

We estimate state-by-state 2×2 DID regressions after correcting for the misclassification of pre-event changes as post-event changes in the E-Index. Our design zeroes in on the changes in the E-Index between consecutive ISS surveys centered on the effective date of UD laws across adopting states. While Appel (2019) finds that the adoption of UD laws is associated with an overall increase in the E-Index, we find that prior evidence cannot be generalized state-by-state. After correcting for the misclassification of pre-event changes as post-event changes in the E-Index, our state-by-state DID regression results show that the estimated effect on the E-Index is statistically significant only for the state of Pennsylvania and it is indistinguishable from zero for other UD law adopting states.

Focusing on Pennsylvania, the estimated effect comes with a *negative* rather than a positive sign. Based on this evidence, one might be tempted to infer that the adoption of UD laws led to a ubiquitous *decrease* in the use of entrenchment provisions in Pennsylvania. This conclusion, however, is not supported by the scant prevalence of changes in the use of entrenchment provisions. Our granular analysis shows that the vast majority of treated firms did not experience a change in their E-Index. In particular, we observe that after the UD law adoption out of the 27 firms incorporated in Pennsylvania with ISS coverage, 24 cases did not experience a change in their E-Index, a single case experienced an increase, and two cases experienced a decrease in their E-Index.

Since the vast majority of changes in the use entrenchment provisions are in fact announced before, often well before, the enactment of UD laws, we conclude that changes in the E-Index across treated firms cannot be causally attributed to UD laws. Our last set of results speaks to the fundamental reasons behind the decision to adopt entrenchment provisions. With this objective in mind, we focus on the group of 20 affected firms that adopt entrenchment provisions. For these cases, we measure the cumulative stock return performance leading to the date of adoption of entrenchment provisions. We document that this group underperforms the market and characteristic benchmark portfolio by as much as -38% in the two years leading to the change in their E-Index. The evidence highlights that the use of entrenchment provisions, and most notably antitakeover tactics, is endogenously determined. Indeed, the evidence implies that declining firms in UD law adopting states adopt poison pills and golden parachutes as antitakeover provisions only after substantial long-term drops in value. Viewed as a whole, evidence of a strong link between the adoption of entrenchment provisions and past stock return performance casts doubt on the alternative possibility that management chooses to become more entrenched in anticipation of the enactment of UD laws and a potential decrease in future derivative litigation risk.

Overall, our granular investigation of the use of entrenchment provisions among affected firms shows that the link between UD laws and corporate governance is influenced by a small number of firms adopting antitakeover provisions after substantial long-term drops in value. At a higher level, our paper demonstrates the risks in the utilization of identifiers in empirical corporate governance research. Conceptually, the use of plausibly

exogenous sources of variation in the determinants of corporate governance holds great promise for addressing endogeneity issues. However, the application of an identifier should be built upon institutional foundations that offer strong theoretical support for the hypothesized effect.

Moreover, when the state-by-state adoption of laws is used for identification, the estimated effects on corporate governance can be disproportionately affected by a few influential cases. As our granular analysis illustrates, it is critical to scrutinize individual cases in detail for measurement error, misclassification issues, and other confounding forces that may otherwise drive the estimated effects. More specifically, the misclassification of pre-event changes in the use of entrenchment provisions as seemingly post-event changes in the E-Index is a relevant confounding factor for research on changes in corporate governance and management entrenchment based on the ISS legacy database. Ultimately, our findings call for caution in the search for new identifiers in general and the use of UD laws in particular. While prior studies often rely on a fundamental premise that the protection from suit the UD laws might bring will engender a change in corporate governance, we conclude that the connection between firm governance and UD laws is still questionable at best.

Our paper is more closely related to a recent study by Donelson et al. (2022). Their study casts doubt on the validity of UD laws as an exogenous shock to litigation risk. While their main analysis focuses on the strength of UD laws as a shock to derivative litigation, they also explore the effect of UD laws on various aspects of firm behavior, including aggressive accounting, voluntary disclosures, executive compensation, and governance. Within the context of Appel's staggered DID regression, they argue that evidence of an increase in the E-Index of in UD law adopting states is confounded by pre-existing differences between treatment and control firms that are indicative of a violation in the parallel-trends assumption.¹

¹While Appel finds evidence that UD law adoption is associated with a significant drop in the likelihood of derivative litigation between 1994 and 2010, Donelson et al. (2022) conclude that the adoption of UD laws had no detectable impact on derivative litigation. Since UD laws were designed to address frivolous litigation, it is possible that there was a decrease in of frivolous litigation that was offset by an increase in meritorious litigation across UD law adopting states. Separating frivolous from meritorious litigation would be a complex task that would require tracking litigation outcomes over a long period time.

Different from prior work, we provide a granular analysis of the adoption of entrenchment provisions among firms incorporated in UD law states and provide evidence on the fundamental reasons behind the decision to adopt such provisions. Whereas prior studies backfill observations with missing coverage between consecutive ISS surveys, we identify the exact adoption dates of individual entrenchment provisions across affected firms. Using hand-collected data, we provide case-by-case evidence that the vast majority of changes in the E-Index among affected firms actually occur *prior* to the effective date of UD laws and cannot be causally attributed to UD laws.

The issue of misclassification of pre-adoption changes in the use of entrenchment provisions as post-adoption changes in the E-Index has not been explored in prior UD law research. The misclassification issue has broader implications for any study that zeroes in on the identification of the timing of changes in the use of entrenchment provisions using the ISS legacy database and adds to research highlighting the difficulty of coding and measuring corporate governance (e.g., Spamann 2010; Larcker, Reiss, and Xiao 2015; Karthaus, von Meyerinck, and Schmid, 2021; Frankenreiter, Hwang, Nili, and Talley, 2021).

Our paper is also related to methods papers probing measurement and identification issues in the law and finance. Black et al. (2022) underscore the importance of confirming the principal causal channels of natural experiments. Failure to provide support for the principal causal channels raises questions about the robustness of other indirect effects. Black et al. (2022) zero in on SEC's 2005-2007 Reg SHO short-sale experiment and reassess the three most often cited causal channels for the several indirect effects explored in accounting and finance research, including short interest, stock returns, and managerial fear. They find weak evidence supporting the principal causal channels asserted in the studies of the indirect effects of Reg SHO and conclude that studies on the indirect effects of Reg SHO may also prove not to be robust if closely examined. Black's et al. (2022) critique of the Reg SHO setting extends to the UD law setting and given the tenuous link between UD law adoption and corporate governance, raises questions about doubt on follow-up studies on the indirect effects of UD law adoption.

2. Institutional Background

2.1 Derivative suits and the demand requirement

Directors are subject to fiduciary duties, which encompass the duty of care and the duty of loyalty. The duty of loyalty imposes on corporate directors and officers the obligation *not to actively exploit their positions within the corporation for their own personal benefit, or hinder the ability of a corporation to continue the business for which it was developed.*² Under the duty of care standard, the directors and officers *have a duty to inform themselves, prior to making a business decision, of all material information reasonably available to them.*³ The level of conduct associated with breaching this standard has been set forth by courts as *gross negligence.*⁴ The duty of care is ultimately a process-based requirement that does not look to the substance of a decision, but rather the process utilized to reach it. Enforcement of these duties occurs through litigation. Director fiduciary duties run from the director to the company, and so it is only the company which can bring an enforcement suit. However, the company is run by directors who are unlikely to agree to have the company sue themselves for an alleged fiduciary duty breach. To address this issue, courts and legislative statutes allow for derivative actions. These are actions against directors and officers brought by shareholders on behalf of the company to enforce fiduciary duties (e.g., Erickson 2010; Thompson and Thomas 2004).

Because the derivative action right lies with the company itself, the law has not automatically permitted shareholders to sue for a breach of fiduciary duty. Instead, corporate laws in each state require that shareholders must first make a demand on the company to bring the lawsuit (Davis 2008). The company will constitute a special litigation committee (SLC) of disinterested directors to consider the demand. The SLC can recommend pursuing the suit, settling the suit, or dismissing the action. Shareholders can then challenge the decision of the SLC if it is not made on a disinterested basis (Krishnan et al. 2020). In response to claims that the SLC process may be a “hollow” one, which cannot purge the taint

² Veco Corp. v. Babcock, 611 N.E.2d 1054, 1059 (App. Ct., 2nd Div. Ill).

³ In re Bridgeport Holdings, Inc., 388 B.R. at 569 quoting Cede & Co. v. Technicolor, Inc., 634 A.2d 345, 367 (Del.1993).

⁴ Smith v. Van Gorkom, 488 A.2d 858, 873 (Del. 1985).

of director or officer bias, some states permit a shareholder to forgo a pre-suit demand and claim demand futility. If the shareholders can show that the majority of the board is otherwise conflicted and unable to disinterestedly consider the demand, shareholders can bring suit without making a demand on the board or undergoing the SLC process (Hazard and Rock 2004).

UD laws were first adopted in 1989 in Georgia and Michigan. These laws were put forth by a public interest group and purported to eliminate frivolous fiduciary duty suits because they required that without exception, for suits alleging a breach of fiduciary duty by directors, shareholders had to make a pre-suit demand on the company.⁵ This eliminated the option for shareholders to sue first and plead demand futility to avoid having to submit a demand on the board. UD laws also generally require that courts defer to the decision of an SLC to refuse to continue the potential lawsuit. This deference is under the so-called business judgement rule and generally provides that so long as the members of the SLC acted in a disinterested and informed capacity, the court will defer to the SLC's decision. Appendix 1 sets forth the 23 states which have adopted UD laws and their dates of passage and effect from 1989-2005.

2.2 The theoretical effect of UD laws

There are multiple potential theoretical effects of UD laws on corporate governance. Appel (2019) and follow-up UD law papers operate under the assumption that UD laws present a significant obstacle to derivative lawsuits. These papers further rely on the theory that increased barriers to derivative lawsuits undermine the deterrence effect of lawsuits permitting *the worst types of management to get away with the most serious kinds of misconduct*.⁶ At a minimum, these papers assume that UD laws have a discernable effect on management behavior.

A countervailing theory, though, posits no deterrence effect for UD laws. Instead, the intended effect of UD laws is to do away with frivolous litigation that imposes undue

⁵ We have reviewed the news coverage and other public records of these laws during this time period and have found no evidence that they are driven by a political economy rationale, namely a desire to protect individual firms. Rather this appears to be an organic lobbying effort that went largely unnoticed during this time.

⁶ "New York State May Put Curbs on Certain Types of Holder Suits," Richard B. Schmitt, Wall St. J., Nov. 29, 1983.

litigation costs on companies. In this scenario, for lawsuits alleging breaches of fiduciary duties, SLCs are fully able to consider these issues and allow the non-frivolous lawsuits to proceed. UD laws, therefore, should have no effect on management entrenchment since they eliminate only frivolous suits. This theory is supported by the fact that directors are rarely held personally liable for breaches of fiduciary duty no matter the litigation regime and are exculpated from monetary damages for breaches of the duty of care (Black, Cheffins, and Klausner 2006). Eliminating fiduciary duty suits is thus about eliminating litigation costs for companies and directors-and-officers (D&O) insurers.

Beyond the countervailing theory there is the issue of whether UD laws even have an effect on the measures UD law papers study. In this vein, Appel (2019) posits a variety of consequences from UD law passage, including entrenching actions by the board, higher quality directors, differing disclosure patterns, and differing costs of debt and equity. However, the mechanism for this effect is unclear. Duty of care cases relate to how a board considered matters brought to its decision-making, involving an inquiry into whether the board had sufficient information when it made its decision, as well as other timing and process variables. These processes do not appear to be related to the topics that UD law papers have examined.

Meanwhile, duty of loyalty cases involve self-dealing conduct that provides private gains to directors. These are principally related-party transactions and usurpations of corporate opportunity. The relation of the duty of loyalty to UD laws is again ambiguous, since these types of duty of loyalty claims are limited to self-dealing, rather than general governance issues of the type that UD law papers have examined. In particular, the duty of loyalty does not regulate the use of governance provisions embedded in entrenchment indexes. In the particular instance of claims related to takeovers, these are principally direct not derivative actions and so unaffected by UD laws. Moreover, contrary to the conjecture that UD laws are entrenching, it may be that the passage of UD laws incentivizes managers to adopt fewer antitakeover provisions, since the adoption of these laws can theoretically provide more protection for directors to “just say no” to a takeover.

This issue of a viable mechanism has raised substantial questions about the UD law papers. More specifically, the channel that these papers seek to identify may not be rooted

in the relation between the UD laws themselves and the types of actions they pursue (which are different actions and conduct than what the UD papers study). This differential raises the real possibility that the findings of UD law studies may be confounded by measurement and identification issues. It is this possibility that we explore in this paper.

3. Research Design

3.1 State of incorporation data

The sample consists of firms in the CRSP-Compustat merged database between 1990 and 2006. Our sample starts in 1990 because ISS survey coverage was initiated in September 1990. The last year in our sample corresponds to the first available ISS survey in January 2006, after Rhode Island and South Dakota enacted UD laws in July 2005. To derive our sample, we first require non-missing information about total assets and market capitalization at the end of the fiscal year. Following prior research, we exclude financials (SIC 6000-6999), utilities (SIC 4900-4999), and non-classifiable firms (SIC 9000-9999). We further require non-missing information about the state of incorporation and headquarters location. We exclude non-US incorporated firms as well as reincorporated firms because UD laws may endogenously affect the choice of incorporation.

To identify treated and control firms, we obtain point-in-time state of incorporation data from the SEC Analytics Suite database. The SEC Analytics Suite extracts information from SEC's EDGAR system and its coverage is restricted in the post-1996 period. We merge the SEC Analytics Suite database with pre-1996 state of incorporation data used in Sanga (2020), who compiles records from Thomson Reuters, LexisNexis, and Moody's. We also obtain point-in-time headquarters location data from the SEC Analytics Suite database to identify in-state companies. Due to lack of pre-1996 headquarter information, we backfill the first available information, effectively assuming that corporate headquarter relocations occur infrequently.

Figure 1, Panel A, plots the frequency of firms incorporated in each state between 1990 and 2006. Consistent with prior work, we observe that the distribution of incorporation clusters is not uniform (e.g., Hu and Spamann 2020). In fact, nearly 55% of firms in the general CRSP-Compustat population are incorporated in Delaware. Figure 1,

Panel B, plots the frequency of in-state incorporations; that is, companies with headquarters located in the state of incorporation. Since most Delaware incorporations are out-of-state incorporations, we note that “in-state” Delaware incorporations account for just 0.4% of the general CRSP-Compustat population. The state with the highest frequency of in-state incorporations is California (3.8%), followed by New York (2.6%), and Pennsylvania (2.4%). Collectively, the group of 23 adopting states account for 15.2% of the general CRSP-Compustat population.

Appendix 1 provides the list of adopting states along with the corresponding citation and precise effective date obtained from state legislative records. In order to confirm the relevant provisions of the state codes, we searched historical statutes to determine the effective date of the UD law.⁷

3.2 Corporate governance data

We obtain governance data from the ISS governance legacy database. ISS collects information on corporate governance provisions from public filings every two or three years between 1990 and 2006. The legacy database covers the S&P1500 constituents and other large public firms with high institutional ownership. The ISS database tracks 24 unique governance provisions, each coded as a binary indicator variable. The ISS database does not provide information about the exact adoption date for the corporate governance provisions that it tracks, and there is no documentation regarding the underlying sources and coding process. This is an important limitation, since the comparison of consecutive ISS surveys allows the identification of changes in the E-Index over the window stretching between the surveys, but not the precise date of adoption.

Following Bebchuk et al. (2009), we construct the entrenchment index (E-Index) using ISS data. The E-Index is defined as the sum of six governance provisions which are arguably detrimental to shareholders and have been associated with negative outcomes. The vector of provisions includes (1) an indicator that equals one if the entity has a classified

⁷ We note that, following Donelson et al. (2022), we use March 13, 2000, as the UD law adoption year for the state of Utah. Appel (2019) and several follow-up studies incorrectly use July 1, 1992, as the UD adoption date for Utah based on a partial adoption of a revision of the Model Business Corporations Act. Our inferences are not sensitive when Utah is coded as adopting in 1992 or 2000.

board in which directors are divided into separate classes with each class being elected to overlapping terms (Classified Board), (2) an indicator that equals one if the entity has a supermajority voting requirement, which requires more than a majority of shareholders to approve a merger (Supermajority Voting), (3) an indicator that equals one if the entity has a provision limiting shareholders' ability through a majority vote to amend the corporate bylaws (Limit Bylaws), (4) an indicator that equals one if the entity has a provision limiting shareholders' ability through a majority vote to amend the corporate charter (Limit Charter), (5) an indicator that equals one if the entity has a poison pill, which is 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 (Poison Pill), and (6) an indicator that equals one if the entity has a golden parachute, which is a severance agreement that provides benefits to management/board members in the event of firing, demotion, or resignation following a change in control (Golden Parachute).

With respect to the E-Index components, we note that four of the provisions, including classified boards, supermajority voting, and the limits on shareholder bylaw and charter amendments, can restrict shareholder voting power. The two remaining provisions, poison pills and golden parachutes, are antitakeover provisions which can theoretically insulate the company management from the risk of a hostile takeover.⁸

Between 1990 and 2006, the ISS legacy database provides information about the use of E-index governance provisions only on the following dates: September 1990, July 1993, July 1995, February 1998, February 2000, February 2002, January 2004, and January 2006. Between 1990 and 2006, the minimum (maximum) lag between consecutive ISS surveys is 1.9 (2.8) years. Prior research using the ISS legacy data typically backfills observations with

⁸ We note that an emerging literature challenges the importance of antitakeover defenses and questions whether the adoption of antitakeover provisions necessarily indicate that corporate governance is materially changed. In particular, Catan and Kahan (2016) argue that the ability of a firm to adopt a poison pill at any time—a so-called shadow poison pill—may make a poison pill adoption meaningless. Klausner (2013) also points out the irrelevance of antitakeover provisions in the presence of a shadow pill. Baker (2022) provides evidence consistent with the argument that antitakeover statutes provide little additional takeover deterrence in the presence of a shadow pill. Lund and Schonlau (2017) also argue that golden parachutes are not a takeover deterrent because they incentivize managers to sell the firm rather than entrench themselves. Accordingly, evidence of an increase in the E-index may not necessarily indicate that the firm governance is materially changed in terms of entrenchment or director and manager ability to rent-seek.

missing coverage between consecutive ISS surveys (e.g., Gompers et al. 2003; Bebchuk et al. 2009). Unlike prior research, our state-by-state DID research design zeroes in on changes in the use of entrenchment provisions by comparing the ISS surveys immediately before and after the effective date of the UD law.

3.3 Research design

To identify the effect of UD laws on the use of entrenchment provisions, we implement a standard two-group, two-period DID separately for each UD law adopting state. Our 2×2 DID research design compares treated and control firms in terms of the pre-post change in their E-Index before and after the adoption of UD laws separately for each adopting state. Accordingly, we specify the following baseline regression model specification estimated separately for each UD law adopting state:

$$y_{i,s,t} = \beta_s I(TREAT_{i,s,t}) + \gamma_{j,t} + c_{i,s,t} + \varepsilon_{i,s,t} \quad (1)$$

where $y_{i,s,t}$ is the change in the E-Index, $I(TREAT_{i,s,t})$ is an indicator that equals one after the adoption of UD laws in firm i 's state of incorporation s as of the end of calendar year t , $\gamma_{j,t}$ is a vector of GICS sector fixed effects, and $c_{i,s,t}$ is a vector of time-varying firm characteristics, including log total assets, financial leverage, cash holdings, R&D intensity, and capital expenditure.⁹ The β_s coefficient is the DID estimator, which captures the difference in the pre-post change in the E-Index for the treated group of firms incorporated in each UD law adopting state relative to the control group of firms incorporated in states that never adopted UD laws (never treated states).

Hu and Spamann (2020) point out that corporate governance studies using state-level legislative changes for identification typically base statistical inferences on standard errors clustered by state of incorporation. This practice, however, has the potential to understate false positive rates and over-reject the null hypothesis of no effect in small samples. Hu and Spamann (2020) recommend the use of Imbens and Kolesar's (2016)

⁹ The vector of sector fixed effects is based on the two-digit Global Industry Classification Standard (GICS) taxonomy, which includes eleven sectors. Our results are unchanged using alternative taxonomies based on SIC codes, NAICS codes, and the Fama-French classification.

degree-of-freedom adjustment for clustered standard errors. Following their recommendation, we compute t-statistics based on degree-of-freedom adjusted standard errors clustered by state of incorporation (R package “dfadjust”). We observe that degree-of-freedom adjusted standard errors are generally higher relative to the unadjusted standard errors.

Statistical inferences based on clustered standard errors can work well when large sample theory provides a good guide to the finite-sample properties of the cluster-robust variance matrix estimator. One commonly used way to improve inference in small samples is to generate bootstrap samples that mimic the distribution from which the actual sample is obtained. The wild bootstrap data generating process is known to perform well in terms of matching the true data generating process. The wild bootstrap is suitable when conventional inference becomes unreliable due to regression models with heteroskedasticity of unknown form or the violation of large-sample assumptions (Liu 1988; Wu 1986). We report wild bootstrapped p-values using Roodman’s et al. (2019) implementation (R package “fwildclusterboot”).

The treated group includes firms incorporated in UD law adopting states. The vast majority of treated firms are in-state incorporations; that is, they are incorporated in the state of the headquarters location. The control group includes firms incorporated in states that never adopted UD laws. An important feature of the setting is that the control group is dominated by firms incorporated in Delaware. The state of Delaware never adopted UD laws and, as we saw earlier, nearly 55% of firms in the general CRSP-Compustat population are incorporated in Delaware. Bebchuk and Cohen (2003) highlight that a firm’s incorporation decision is endogenous and typically boils down to the choice between Delaware and the home state; that is, the state where the headquarters are located.

Given the dominance of Delaware in the market for out-of-state incorporations, we report DID estimates for (a) the full control group of in-state and out-of-state incorporations, (b) the restricted control group that excludes out-of-state incorporations and dual-class companies. The restricted control group effectively drops the bulk of Delaware firms since most Delaware incorporations are out-of-state incorporations. We further drop dual-class

companies from the restricted control group because Bebchuk's et al. (2009) E-Index was not designed to capture management entrenchment for dual-class companies.

3.4 Timeline

With respect to the pre- and post-UD law adoption comparisons, our design hews closely to the timeline of the ISS survey release dates. We compute changes in the E-Index between (a) the last ISS survey before the UD law effective date and (b) the first ISS survey after the UD law effective date. As an illustrative example, consider the adoption of UD laws in Pennsylvania (PA), one of the key adopting states. The timeline in Figure 2 illustrates that PA adopted UD laws in April 1997 (event date). The last ISS survey before April 1997 was released in July 1995 (pre-event survey), and the first ISS survey after PA's UD law adoption was released in February 1998 (post-event survey). Our DID research design zeroes in on the change in the E-Index between consecutive ISS surveys centered on the event date; that is, between the July 1995 ISS survey and the February 1998 ISS survey.

The research design timeline in Figure 2 also illustrates a deeper issue with respect to the identification of the impact of UD laws on changes in the E-Index. Consider the scenario of a firm that is incorporated in PA that adopts entrenchment provisions after the pre-event ISS survey was released in July 1995 but before the UD law effective date in April 1997. While the comparison of ISS survey data would capture changes in the E-Index between consecutive surveys, it would not allow for the identification of the exact timing of the adoption of individual entrenchment provisions. The limitations in the legacy ISS survey data raise the possibility of pre-event changes in the use of entrenchment provisions being falsely interpreted as post-event changes in the E-index (i.e., following the adoption of UD laws).

Put differently, due to the significant lag between surveys in the ISS legacy database, observed changes in the use of entrenchment provisions between consecutive ISS surveys centered on the UD law effective date may actually happen prior to the adoption of UD laws. One direct approach to correcting for this issue would be to use the exact dates of adoption of the various governance provisions tracked by the ISS surveys. Unfortunately, the ISS legacy database does not provide the adoption dates for individual entrenchment provisions and therefore the data on the use of provisions blend together pre- and post-event changes

in the E-Index. This is a relevant issue since a prerequisite for the identification of a causal effect is that the change in the use of entrenchment provisions among affected firms incorporated in adopting states occurs after, not before, the UD law adoption date.

Prior work does not explore the misclassification issue and does not separate changes in the E-Index that occur between consecutive ISS surveys but before the UD law effective date. To overcome this issue, we first identify firms incorporated in adopting states. We then separate cases that appear in the ISS legacy database as adopters of any of the six entrenchment provisions underlying the E-Index. For these cases, we hand-collect information from public filings and identify the exact adoption date for each governance provision. This procedure allows us to separate changes in the E-Index that occur between consecutive ISS surveys but before the UD law effective date for each adopting state.

3.5 Replication of Appel (2019)

Starting with Appel (2019) study, UD law studies typically use a two-way fixed effect (TWFE) estimator to estimate the effect of the staggered adoption of UD laws across states. Goodman-Bacon (2021) shows that the TWFE estimator in staggered DID settings is not easily interpretable since it is a weighted average of all possible 2×2 DID pairs that compare one group that changes treatment status to another group that does not. The weights are based on the various groups' sizes and the variance in treatment in each of the 2×2 DID pairs. The Goodman-Bacon decomposition of the TWFE estimator shows that a critical issue with staggered DID designs is the use of already treated units as controls in comparisons with future treated units, i.e., the late to early comparisons. Because already treated units act as controls in some 2×2 DID pairs, Goodman-Bacon (2021) shows that identification requires the additional assumption of time-invariant treatment effects.

In applied settings, the assumption of time-invariant treatment effects is unlikely to hold and the TWFE estimator is generally biased (Baker et al. 2022). In contrast to the staggered DID design, our state-by-state, standard 2×2 DID estimator allows for heterogeneous treatment effects across UD law adopting states and is free of the problematic 2×2 DID comparisons that use already-treated firms as controls.

Table A1 in the Supplement replicates Appel's (2019) sample construction and baseline results. Our sample size and summary statistics closely match the prior research. Our replication of Appel's (2019) staggered DID results provides consistent evidence that the adoption of UD laws is associated with an overall increase in the E-Index. In what follows, we present evidence that the link between UD laws and corporate governance cannot be generalized state-by-state and is confounded by measurement and identification issues.

4. Empirical Results

4.1 Distribution of treated firms across UD law adopting states

Table 1, Panel A, reports the UD law effective dates (event dates) across adopting states together with the release dates of the consecutive ISS surveys before and after the event date and the number of treated firms incorporated in UD law adopting states. The total count of incorporations includes both in-state and out-of-state incorporations. The sample includes firms with coverage on the ISS legacy database.

A few relevant observations are in order. First, the sample does not include firms incorporated in Georgia, Michigan, and Florida because all three states adopted UD laws prior to the introduction of the first ISS survey in September 1990. Therefore, for these three states, there is no information about the use of entrenchment provisions prior to the adoption of UD laws. Second, our sample does not include firms incorporated in Montana, New Hampshire, Arizona, and South Dakota due to lack of coverage in the ISS legacy database. Third, pooling across the remaining sixteen adopting states with ISS coverage, our sample includes 110 unique treated firms. We observe that 97 out of the 110 firms are in-state incorporations, 9 of which are also dual-class stocks. This finding is consistent with the fact that Delaware dominates the market for out-of-state incorporations, while UD law adopting states primarily attract in-state incorporations. Fourth, focusing on the sixteen adopting states with ISS coverage, the number of incorporations is as low as a single firm for as many as six states, including Mississippi, Nebraska, Maine, Wyoming, Idaho, and Iowa.

Table 1, Panel B, summarizes the distribution of treated firms with ISS coverage across adopting states. We separate the nine adopting states with at least four observations (WI, VA, NC, CT, PA, TX, UT, IA, and MA) from other adopting states (MI, NE, ME, WY, ID, HI,

and RI). Due to insufficient data, our state-by-state DID estimation also focuses on the nine states with at least four observations. We report the frequency distributions for all incorporations and in-state incorporations. The evidence shows that Pennsylvania accounts for a quarter of all treated firms, followed by Massachusetts (16%), Virginia (15%), North Carolina (10%), Wisconsin (7%), Texas (6%), Connecticut (5%), Utah (5%), and Iowa (4%). Together, these nine adopting states account for 93% of all treated firms, with other adopting states accounting for the remaining 7% of treated firms. The frequency distributions are consistent when we focus on in-state incorporations.

4.2 Frequency of treated firms seemingly adopting entrenchment provisions

Table 2, Panel A, reports the frequency distribution of treated firms with a seeming increase in their E-Index between consecutive ISS surveys centered on the UD law effective date across adopting states. Across adopting states, we find that only 20 cases out of the 110 treated firms appear to experience a pre-post increase in their E-Index, a pooled adoption rate of 18.2%. 10 out of the 20 cases are incorporated in Pennsylvania, three cases are incorporated in Massachusetts, two cases are incorporated in Texas and Utah respectively, and one case is incorporated in Connecticut. The frequency of treated firms experiencing a pre-post increase in their E-Index is exactly zero in Wisconsin, Virginia, North Carolina, and Iowa with all other adopting states with ISS coverage accounting for two cases in total.

Next, we look “under the hood” of changes in the E-Index and examine the adoption of individual entrenchment provisions. The evidence shows that the 20 treated firms for which we observe a pre-post increase in their E-Index adopt a total of 23 entrenchment provisions. We observe that poison pill and golden parachute antitakeover provisions account for 19 out of the total of 23 provision adoptions. In contrast, the adoption of provisions restricting shareholder voting power is rare. Table 2, Panel B and C, provides consistent evidence after excluding firms incorporated in a different state from that of their headquarters location (4 cases, CBS Corp., Checkpoint Systems, Wainoco Oil, Union Pacific) and firms with dual-class structure (1 case, Comcast Corp.).

4.3 Misclassification of pre-event changes in E-Index

An important limitation of the ISS legacy database is that there is a significant lag between consecutive ISS surveys centered on the UD law effective date in each adopting state. In addition, the ISS legacy database does not provide information about the exact adoption dates of individual entrenchment provisions across firms. While one can measure changes in the E-Index between consecutive ISS surveys, the legacy database does not allow for the identification of the exact timing of such changes. It follows that pre-event changes in the E-Index can be misclassified as seemingly post-event changes. This is a key issue since a prerequisite for the identification of a causal effect is that the change in the use of entrenchment provisions among affected firms incorporated in adopting states occurs after, not before, the UD law adoption date.

Next, we hand-collect information on the exact adoption dates of individual entrenchment provisions across treated firms in UD law adopting states that seemingly experience an increase in their E-Index between consecutive ISS surveys. Recall that based on frequency distributions in Table 2, we observe E-index changes in 20 out of the 110 treated firms, which account for a total of 23 individual entrenchment provisions. Our hand-collection efforts focus on identifying the exact adoption dates of each entrenchment provisions across these 20 cases. For each case, we search SEC EDGAR and CapitalIQ for public filings associated with the adoption of entrenchment provisions, including annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and DEF14A definitive proxy statements.

4.4 Corrected frequency of treated firms using entrenchment provisions

Table 3 provides information about the adoption dates across the six entrenchment provisions underlying the E-Index, along with the links to the original SEC filings. Table A2 in the Supplement provides page references and relevant text excerpts from the SEC filings. We successfully identify the adoption dates for 21 out of the 23 entrenchment provisions across the 20 cases of affected firms that seemingly experience a pre-post increase in their E-Index. We fail to identify the public filings for two cases: (a) the adoption of a golden parachute provision by Comcast Corp. (between the ISS surveys of July 1995 and January

1998), and (b) the adoption of a poison pill provision by Wainoco Oil Corp. (also between the ISS surveys of July 1995 and January 1998). For these two cases, we assume that the provision adoption took place in the midpoint of the window between the UD law effective date and the first post-event ISS survey date.

The last column in Table 3 reports the values of an indicator that equals one if the provision adoption precedes the UD law effective date in the state of incorporation. The key finding here is that 16 out of the 23 entrenchment provisions were adopted four quarters prior to the UD law effective date in the state of incorporation. The evidence highlights the prevalence of the misclassification of pre-event changes as post-event changes in the E-Index. Put simply, the vast majority of changes in the E-Index among affected firms actually occurred before, often well before, the UD law effective date and, therefore, cannot be attributed to the enactment of UD laws.¹⁰

As an illustrative example, we consider the case of Charming Shoppes Inc. (incorporated in Pennsylvania). Based on the ISS legacy database, the company adopted a golden parachute provision between the ISS surveys of July 1995 and January 1998. In the absence of more precise information, one might conclude that the golden parachute provision was adopted after the adoption of UD laws on April 21, 1997, in the state of Pennsylvania. This conclusion, however, would be premature. Indeed, the DEF14A definite proxy statement filed on May 23, 1996, shows that the company adopted a golden parachute provision almost a year prior to the UD law effective date in Pennsylvania. Clearly, the change in the E-Index of Charming Shoppes between consecutive ISS surveys would be misclassified as a post-event change in the absence of more precise information from the company filings.

Using our hand-collected information, Table 4 summarizes the corrected frequency of treated firms experiencing an increase in the E-Index across UD law adopting states of incorporation. Focusing on all incorporations, Table 4, Panel A, reports that only 7 out of the 110 treated firms experience an increase in their E-Index after the adoption of UD laws.

¹⁰ One could argue that firms adopt entrenchment provisions in anticipation of the enactment of UD laws and a potential decrease in future litigation risk. In Section 4.6, we investigate the fundamental reasons behind the decision to adopt entrenchment provisions and provide evidence of a strong link between the adoption of such provisions and past declining stock return performance, which casts doubt on this alternative possibility.

Furthermore, all 7 cases are associated with the adoption of poison pills and golden parachute antitakeover provisions. The pooled frequency of treated firms using entrenchment provisions is as low as 6.4%. By eliminating out-of-state incorporations and dual-class firms, Table 4, Panel B and C, show that the pooled frequency of treated firms experiencing an increase in their E-Index is even lower, at 5.2% and 5.7%.

In sum, our case-by-case investigation shows that the majority of increases in the E-Index among affected firms in UD law adopting states actually occurred well before the enactment of UD laws. This finding implies that the parallel-trends assumption—a critical assumption to ensure the internal validity of DID models—is violated in this setting. The issue of misclassification of pre-adoption changes in the use of entrenchment provisions as post-adoption changes in the E-Index has not been explored in prior UD law research and more broadly adds to research highlighting the difficulty of coding and measuring corporate governance.¹¹

4.5 State-by-state DID regression results

Next, we estimate the state-by-state DID regression after correcting for the misclassification of pre-event changes as post-event changes in the E-Index. Our design focuses on the changes in the E-Index between consecutive ISS surveys centered on the effective date of UD laws across adopting states. We estimate the DID regression model in equation (1) separately for each adopting state. Due to the sample limitations, we focus on the nine adopting states with at least four observations: WI, VA, NC, CT, PA, TX, UT, IA, and MA. Different from the staggered DID estimation, the state-by-state DID estimation allows for heterogenous treatment effects across adopting states. The estimated slope coefficient on the treatment indicator provides the DID estimate from the pre-post comparison of the treated group of firms incorporated in each adopting states relative to control group of firms incorporated in states that never adopted UD laws (never treated states).

¹¹ Spamann (2010) reevaluates the coding of the widely used anti-director right index and tells a cautionary tale about the need for or validation of the accuracy of the coding of governance indices more broadly. Our case-by-case investigation reinforces Spamann’s point in the UD law setting and provides new evidence on the prevalence of the misclassification of pre-event changes in the use of entrenchment provisions as post-event changes in the E-index.

Table 5 reports the state-by-state DID regression results. There are five cohorts of control firms incorporated in never treated states. The first cohort spans the two consecutive ISS surveys between September 1990 and July 1993 and is used as the control group in the state-by-state DID regressions for WI (May 1991 adoption) and VA (July 1992 adoption). The second cohort spans the two consecutive ISS surveys between July 1995 and February 1998 and is used as the control group in the DID regressions for NC (October 1995 adoption), CT (January 1997 adoption), PA (April 1997 adoption), and TX (September 1997 adoption). The third cohort spans the ISS surveys between February 2002 and January 2004 and is used as the control group in the DID regression for IA (January 2003 adoption). The fourth cohort spans the ISS surveys between February 2000 and February 2002 and is used as the control group in the DID regression for UT (May 2000 adoption). Lastly, the fifth cohort spans the ISS surveys between January 2004 and January 2006 and is used as the control group in the DID regression for MA (July 2004 adoption). The number of observations in the control group of never treated firms is 658 for the first, 631 for the second, 983 for the third, and 912 for the last cohort.

Panel A reports results using all incorporations, Panel B reports results focusing on in-state incorporations, and Panel C reports results after excluding out-of-state incorporations and dual-class companies. The inclusion of time-varying firm controls in the DID may introduce estimation bias if firm characteristics are endogenously affected by the adoption of UD laws (Angrist and Pischke 2008). To address this issue, Panel D reports results without time-varying firm characteristics. Our evidence is not sensitive to the inclusion of out-of-state incorporations, dual-class companies, and time-varying firm characteristics.

Across specifications, the estimated effect on the E-Index is statistically significant only for the state of Pennsylvania and it is indistinguishable from zero for other UD law adopting states. Focusing on Pennsylvania, the estimated effect comes with a negative sign, which indicates a *decrease* rather than an increase in management entrenchment after the adoption of UD laws. With respect to the negative estimated effect, one might be tempted to infer that the adoption of UD laws in Pennsylvania in fact led to a ubiquitous decrease in the use of entrenchment provisions for treated firms relative to the control group of firms

incorporated in states that never adopted UD laws. This conclusion, however, is not supported by the scant prevalence of changes in the use of entrenchment provisions across treated firms (as indicated in the last three rows of each panel). Indeed, we observe that after the UD law adoption out of the 27 firms incorporated in Pennsylvania with ISS coverage, 24 cases did not experience a change in their E-Index, a single case experienced an increase, and two cases experienced a decrease in their E-Index.¹²

While Appel (2019) finds that the adoption of UD laws is associated with an overall increase in the E-Index, we find that prior evidence cannot be generalized state-by-state. Importantly, our case-by-case investigation shows that the vast majority of changes in the use entrenchment provisions are in fact announced before, often well before, the enactment of UD laws implies that changes in the E-Index across treated firms cannot be causally attributed to UD laws. We next attempt to shed light on the fundamental reasons behind the decision to adopt entrenchment provisions.

4.6 Another perspective on the adoption of entrenchment provisions

Our last set of results focuses on the complete set of 20 treated firms experiencing an increase in their E-Index (see Table 2, Panel A). For these 20 cases, we measure the cumulative stock return performance leading to the date of adoption of an entrenchment provision. We use the entrenchment provision dates identified in Table 3 and, for cases adopting multiple provisions, we focus on the first adoption. We obtain stock return data from CRSP and report market-adjusted as well as size and B/M factor-adjusted returns using the Fama-French 5×5 portfolio breakpoints. We drop one case, MKS Instruments, Inc., due to missing CRSP coverage of privately-held firms. Effectively, we examine the stock return performance of 17 unique firms adopting entrenchment provisions. We note that for 16 out

¹² Heath et al. (2022) point out that the repeated reuse of experimental settings—like the UD law adoption setting— leads to a multiple testing problem. Tests are generally considered part of the same family when they support the same research question and use the same data. The reuse of natural experiments without correcting for multiple testing may lead to more false positives being discovered than true positives. With respect to inference, their results show that when reusing a setting a good heuristic is that a new hypothesis should have a t-stat of at least 2.5 if there are 5 prior findings and 3.0 if there are 20 prior findings in the same setting. Our state-by-state regression results show that the t-stats consistently cross Heath's et al. recommended t-stat threshold only for the state of Pennsylvania.

of the 19 cases with CRSP coverage, the target firm adopts antitakeover provisions, which includes 10 firms that adopt golden parachutes and six that adopt poison pills.

Table 6, Panel A reports equal-weighted (EW) and value weighted (VW) average cumulative returns for the one- and two-year windows leading to the adoption of an entrenchment provision. The message is clear. The group of affected firms that also adopt entrenchment provisions underperforms the market index by -17.8% in the twelve months leading to the change in their E-Index. Evidence of underperformance is not sensitive to the use of factor-adjusted returns. The evidence is virtually unchanged on a value-weighted basis and, therefore, the effect is not concentrated in the smaller treated firms in the sample. We further point out that the evidence becomes stronger using a longer return cumulation window. In fact, the group of affected firms adopting entrenchment provisions underperforms the market index by as much as -38.4% in the two years leading to the change in their E-Index. The results in Table 6, Panel B, remain consistent after eliminating dual-class firms.

While our objective is not to develop a comprehensive selection model, the evidence highlights the endogenous adoption of entrenchment provisions among treated firms in UD law adopting states. Evidence of a strong link between the adoption of entrenchment provisions and past stock return performance casts doubt on the alternative possibility that management chooses to become more entrenched in anticipation of the enactment of UD laws and a potential decrease in future derivative litigation risk. In addition, our evidence on the endogenous use of entrenchment provisions is broadly consistent with Catan's (2019) evidence on the determinants of poison pill adoption.

5. Conclusion

A growing line of studies explores the implications of UD laws for corporate governance. A key finding is that firms incorporated in UD law adopting states experience an increase in the use of entrenchment provisions. Our granular investigation of the use of entrenchment provisions among affected firms shows that the link between UD laws and corporate governance is influenced by a small number of firms adopting antitakeover provisions after substantial long-term drops in value.

Using hand-collected data on the exact adoption dates of individual entrenchment provisions, we further provide evidence that the vast majority of changes in the use of entrenchment provisions among affected firms are in fact announced before, often well before, the UD law effective dates across adopting states. While we do not challenge the theoretical link between litigation risk and corporate governance, we conclude that prior empirical evidence of an increase in the use of entrenchment provisions is confounded by measurement and identification issues and cannot be causally attributed to the adoption of UD laws. Our evidence complements and extends Donelson's et al. (2022) study of the validity of using UD laws as a shock to derivative litigation risk.

At a higher level, our granular analysis has broad implications for the use of index constructs and identifiers. In the search for exogenous sources of variation in the determinants of corporate governance, we must not neglect the theoretical links between law and effect. Our analysis highlights that the application of an identifier should be built upon solid institutional foundations that offer strong *a priori* support for the hypothesized effects. Our case-by-case investigation using hand-collected data further highlights the importance of clearly identifying the timing of changes in the use of entrenchment provisions when investigating the impact of shocks on corporate governance and firm outcomes.

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Appendix 1
UD Law Effective Dates

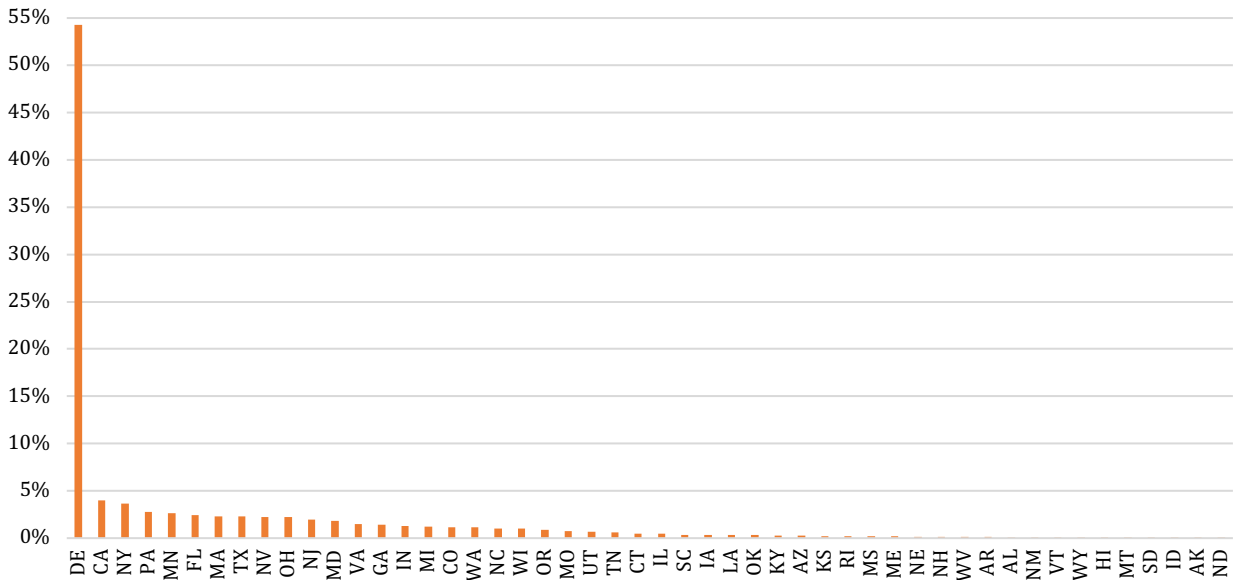
Year	State	Citation	Effective Date
1989	Georgia	Georgia Code Ann. § 14-2-742	Jul-01-1989
1989	Michigan	Michigan Comp. Laws Ann. § 450.1493a	Oct-01-1989
1990	Florida	Florida Stat. Ann. § 607.07401	Jul-01-1990
1991	Wisconsin	Wisconsin Stat. Ann. § 180.742	May-13-1991
1992	Montana	Montana Code Ann. § 35-1-543	Jan-01-1992
1992	Virginia	Virginia Code Ann. § 13.1-672.1B	Jul-01-1992
1993	New Hampshire	New Hampshire Rev. Stat. Ann. § 293-A:7.42	Jan-01-1993
1993	Mississippi	Mississippi Code Ann. § 79-4-7.42	Jul-01-1993
1995	North Carolina	North Carolina Gen. Stat. § 55-7-42	Oct-01-1995
1996	Arizona	Arizona Rev. Stat. Ann. § 10-742	Jan-01-1996
1996	Nebraska	Nebraska Rev. Stat. § 21-2072	Jan-01-1996
1997	Connecticut	Connecticut Gen. Stat. Ann. § 33-722	Jan-01-1997
1997	Maine	Maine Rev. Stat. Ann. 13-C, § 753	Sep-19-1997
1997	Pennsylvania	Cuker v. Mikalauskas (547 Pennsylvania. 600, 692 A.2d 1042)	Apr-21-1997
1997	Texas	Texas Bus. Corp. Act. § 5.14c	Sep-01-1997
1997	Wyoming	Wyoming Stat. § 17-16-742	Jul-01-1997
1998	Idaho	Idaho Code § 30-1-742	Jul-01-1998
2000	Utah	Utah Code Ann. § 16-10a-740(3)(a)	May-01-2000
2001	Hawaii	Hawaii Rev. Stat. § 414-173	Jul-01-2001
2003	Iowa	Iowa Code Ann. § 490.742	Jan-01-2003
2004	Massachusetts	Massachusetts Gen. Laws Ann. Ch. 156D, § 7.42	Jul-01-2004
2005	Rhode Island	Rhode Island Gen. Laws § 7-1.2-710 (C)	Jul-01-2005
2005	South Dakota	South Dakota Codified Laws 47-1A-742	Jul-01-2005

Appendix 2 Variable Definitions

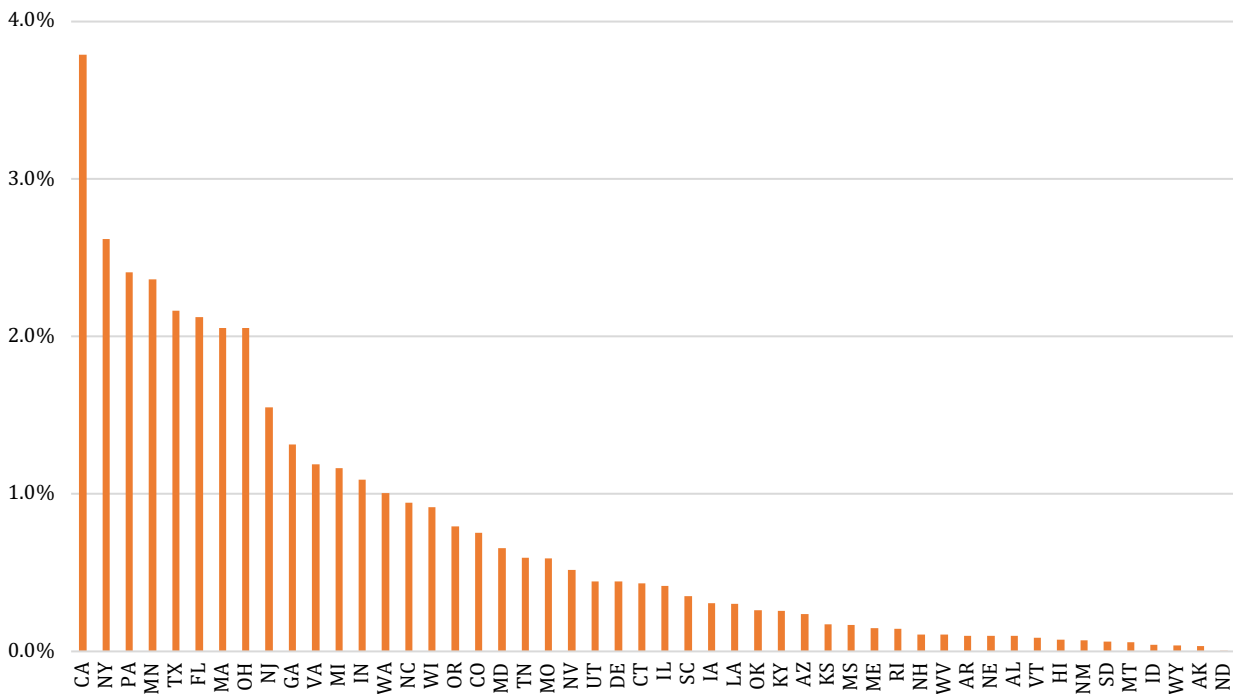
Variable	Definition
Classified Board (CB)	An indicator that equals one if the entity has a classified board in which directors are divided into separate classes with each class being elected to overlapping terms.
Supermajority Voting (SV)	An indicator that equals one if the entity has a supermajority voting requirement, which requires more than a majority of shareholders to approve a merger.
Limit Bylaw (LB)	An indicator that equals one if the entity has a provision limiting shareholders' ability through a majority vote to amend the corporate bylaws.
Limit Charter (LC)	An indicator that equals one if the entity has a provision limiting shareholders' ability through a majority vote to amend the corporate charter.
Poison Pill (PP)	An indicator that equals one if the entity has a poison pill, which is 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.
Golden Parachute (GP)	An indicator that equals one if the entity has a golden parachute, which is a severance agreement that provides benefits to management/board members in the event of firing, demotion, or resignation following a change in control.
E-Index	The Entrenchment Index of Bebchuk, Cohen and Ferrell (2009) measured as the sum of the six entrenchment indicators defined above.
ln(Assets)	The natural logarithm of total assets.
CAPEX	The ratio of capital expenditure divided by total assets. Extreme values are winsorized at the top and bottom percentile.
Leverage	The ratio of total debt divided by total assets. Extreme values are winsorized at the top and bottom percentile.
R&D	The ratio of R&D expenditure divided by total assets. Extreme values are winsorized at the top and bottom percentile.
Cash	The ratio of cash and cash equivalents divided by total assets. Extreme values are winsorized at the top and bottom percentile.

Figure 1
State of Incorporation Frequencies

Panel A: All Incorporations.

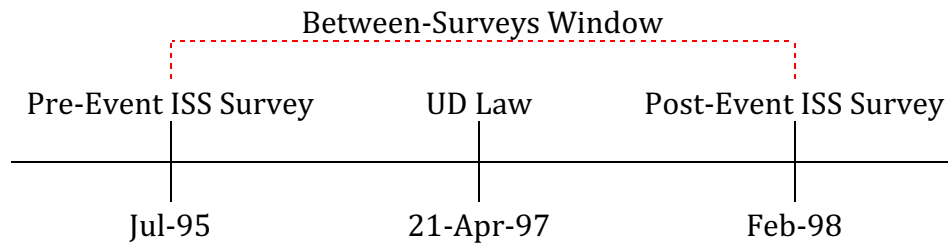


Panel B: In-State Incorporations.



This figure plots the pooled distribution of public firms by state of incorporation. The sample covers all firms in the CRSP-Compustat universe during the period between 1990 and 2006. Panel A includes all firms, and Panel B includes in-state incorporations, whose headquarters are located in their state of incorporation.

Figure 2
Timeline of Research Design: An Illustrative Example



This figure illustrates our DID research design using the adoption of UD laws in Pennsylvania as an illustrative example. Our DID research design contains two time periods, pre and post, and two groups, treated and control.

Table 1
Treated Firm Counts Across UD Law Adopting States

Panel A: Research Design Timeline and Treated Firm Counts.

Treated State	DID Timeline			Treated States		
	UD Law Effective Date	Pre- ISS Survey	Post- ISS Survey	All Inc.	In State	In State w/o Dual
Georgia	Jul-1989	NA	Sep-1990	NA	NA	NA
Michigan	Oct-1989	NA	Sep-1990	NA	NA	NA
Florida	Jul-1990	NA	Sep-1990	NA	NA	NA
Wisconsin	May-1991	Sep-1990	Jul-1993	8	7	6
Montana	Jan-1992	Sep-1990	Jul-1993	NA	NA	NA
Virginia	Jul-1992	Sep-1990	Jul-1993	17	12	11
New Hampshire	Jan-1993	Sep-1990	Jul-1993	NA	NA	NA
Mississippi	Jul-1993	Jul-1993	Jul-1995	1	1	1
North Carolina	Oct-1995	Jul-1995	Feb-1998	11	9	7
Arizona	Jan-1996	Jul-1995	Feb-1998	NA	NA	NA
Nebraska	Jan-1996	Jul-1995	Feb-1998	1	1	1
Connecticut	Jan-1997	Jul-1995	Feb-1998	5	5	3
Maine	Sep-1997	Jul-1995	Feb-1998	1	1	1
Pennsylvania	Apr-1997	Jul-1995	Feb-1998	27	24	23
Texas	Sep-1997	Jul-1995	Feb-1998	7	7	7
Wyoming	Jul-1997	Jul-1995	Feb-1998	1	NA	NA
Idaho	Jul-1998	Feb-1998	Feb-2000	1	1	1
Utah	May-2000	Feb-2000	Feb-2002	5	4	4
Hawaii	Jul-2001	Feb-2000	Feb-2002	1	1	1
Iowa	Jan-2003	Feb-2002	Jan-2004	4	4	3
Massachusetts	Jul-2004	Jan-2004	Jan-2006	18	18	18
Rhode Island	Jul-2005	Jan-2004	Jan-2006	2	2	1
South Dakota	Jul-2005	Jan-2004	Jan-2006	NA	NA	NA
Treated Firm Counts				110	97	88

Panel B: Distribution of Treated Firms Across UD States.

Distribution of Treated Firms						
	All Inc.	In State	In State w/o Dual	% All Inc.	% In State	% In State w/o Dual
Pennsylvania	27	24	23	25%	25%	26%
Massachusetts	18	18	18	16%	19%	20%
Virginia	17	12	11	15%	12%	13%
North Carolina	11	9	7	10%	9%	8%
Wisconsin	8	7	6	7%	7%	7%
Texas	7	7	7	6%	7%	8%
Connecticut	5	5	3	5%	5%	3%
Utah	5	4	4	5%	4%	5%
Iowa	4	4	3	4%	4%	3%
Other Adopting States	8	7	6	7%	7%	7%
Treated Firms	110	97	88	100%	100%	100%

Panel A reports the UD law effective dates across adopting states together with the release dates of the consecutive ISS surveys before and after the event date and the number of treated firms incorporated across adopting states. Panel B reports the distribution of treated firms with consecutive ISS coverage across adopting states. We separate the nine adopting states with at least four observations (WI, VA, NC, CT, PA, TX, UT, IA, and MA) from other adopting states (MI, NE, ME, WY, ID, HI, and RI). The sample includes 110 firms incorporated in UD law adopting states between 1990 and 2006 with ISS coverage around the UD law effective date.

Table 2
Frequency of Treated Firms Adopting Entrenchment provisions

Panel A: Treated Firms, All Incorporations.

	Frequency of Treated Firms Adopting Entrenchment Provisions						$\Delta(\text{EINDEX}) > 0$	OBS	% Adopt
	CB	SV	LB	LC	PP	GP			
Pennsylvania	0	0	0	0	5	6	10	27	37.0%
Massachusetts	0	0	1	0	1	1	3	18	16.7%
Virginia	0	0	0	0	0	0	0	17	0.0%
North Carolina	0	0	0	0	0	0	0	11	0.0%
Wisconsin	0	0	0	0	0	0	0	8	0.0%
Texas	0	0	0	0	2	1	2	7	28.6%
Connecticut	0	0	0	0	0	1	1	5	20.0%
Utah	0	0	0	0	0	2	2	5	40.0%
Iowa	0	0	0	0	0	0	0	4	0.0%
Other Adopting States	0	1	0	0	1	1	2	8	25.0%
Pooled	0	1	1	0	9	12	20	110	18.2%

Panel B: Treated Firms, In-State Incorporations.

	Frequency of Treated Firms Adopting Entrenchment provisions						$\Delta(\text{EINDEX}) > 0$	OBS	% Adopt
	CB	SV	LB	LC	PP	GP			
Pennsylvania	0	0	0	0	4	4	8	24	33.3%
Massachusetts	0	0	1	0	1	1	3	18	16.7%
Virginia	0	0	0	0	0	0	0	12	0.0%
North Carolina	0	0	0	0	0	0	0	9	0.0%
Wisconsin	0	0	0	0	0	0	0	7	0.0%
Texas	0	0	0	0	2	1	2	7	28.6%
Connecticut	0	0	0	0	0	1	1	5	20.0%
Utah	0	0	0	0	0	1	1	4	25.0%
Iowa	0	0	0	0	0	0	0	4	0.0%
Other Adopting States	0	1	0	0	0	0	1	7	14.3%
Pooled	0	1	1	0	7	8	16	97	16.5%

Panel C: Treated Firms, In-State Incorporations Ex Dual-Class.

	Frequency of Treated Firms Adopting Entrenchment provisions						$\Delta(\text{EINDEX}) > 0$	OBS	% Adopt
	CB	SV	LB	LC	PP	GP			
Pennsylvania	0	0	0	0	4	3	7	23	30.4%
Massachusetts	0	0	1	0	1	1	3	18	16.7%
Virginia	0	0	0	0	0	0	0	11	0.0%
North Carolina	0	0	0	0	0	0	0	7	0.0%
Wisconsin	0	0	0	0	0	0	0	6	0.0%
Texas	0	0	0	0	2	1	2	7	28.6%
Connecticut	0	0	0	0	0	1	1	3	33.3%
Utah	0	0	0	0	0	1	1	4	25.0%
Iowa	0	0	0	0	0	0	0	3	0.0%
Other Adopting States	0	1	0	0	0	0	1	6	16.7%
Pooled	0	1	1	0	7	7	15	88	17.0%

This table reports the frequency distribution of treated firms experiencing an increase in their E-Index between consecutive ISS surveys centered on the UD law adoption date across states. We separate the nine adopting states with at least four observations (WI, VA, NC, CT, PA, TX, UT, IA, and MA) from other adopting states (MI, NE, ME, WY, ID, HI, and RI). The columns correspond to the six entrenchment provisions underlying the E-Index, including classified board (CB), supermajority voting (SV), limit bylaw (LB), limit charter (LC), poison pill (PP), and golden parachute (GP). The sample includes 110 firms incorporated in UD law adopting states between 1990 and 2006 with ISS coverage around the UD law effective date. Panel A reports the frequency distribution for the full sample. Panel B reports the frequency distribution for the subsample of firms with in-state incorporations; that is, excluding firms incorporated in a different state from that of their headquarters location. Appendix 2 provides detailed definitions.

Table 3
Identifying the Adoption Dates of Entrenchment Provisions

State Inc.	Company Name	UD Law Date	Pre-Event ISS Survey	Post-Event ISS Survey	CB	SV	LB	LC	PP	GP	Filings	Provision Adopt Date	I(PRE, effective)
MS	FIRST MISSISSIPPI CORP	7/1/1993	Jul-1993	Jul-1995	0	1	0	0	0	0	10-K	9/26/1990	1
CT	GERBER SCIENTIFIC INC	1/1/1997	Jul-1995	Feb-1998	0	0	0	0	0	1	DEF14A	4/28/1995	1
PA	COMCAST CORP	4/21/1997	Jul-1995	Feb-1998	0	0	0	0	0	1	NA	9/24/1997*	0
PA	SUN INC	4/21/1997	Jul-1995	Feb-1998	0	0	0	0	1	0	8-K	2/1/1996	1
PA	CBS CORP	4/21/1997	Jul-1995	Feb-1998	0	0	0	0	0	1	DEF14A	11/28/1995	1
PA	CBS CORP	4/21/1997	Jul-1995	Feb-1998	0	0	0	0	1	0	10-K	12/29/1995	1
PA	CROWN CORK & SEAL CO INC	4/21/1997	Jul-1995	Feb-1998	0	0	0	0	1	0	8-A	8/7/1995	1
PA	ARMSTRONG WORLD IND INC	4/21/1997	Jul-1995	Feb-1998	0	0	0	0	0	1	DEF14A	3/18/1997	1
PA	CHARMING SHOPPES INC	4/21/1997	Jul-1995	Feb-1998	0	0	0	0	0	1	DEF14A	5/23/1996	1
PA	CHECKPOINT SYSTEMS INC	4/21/1997	Jul-1995	Feb-1998	0	0	0	0	0	1	DEF14A	7/1/1995	1
PA	MINE SAFETY APPLIANCES CO	4/21/1997	Jul-1995	Feb-1998	0	0	0	0	1	0	10-K	2/10/1997	1
PA	GLATFELTER P H CO	4/21/1997	Jul-1995	Feb-1998	0	0	0	0	0	1	DEF14A	3/13/1997	1
PA	INTELLIGENT ELECTRONICS INC	4/21/1997	Jul-1995	Feb-1998	0	0	0	0	1	0	10-K	3/8/1996	1
TX	SOUTHWEST AIRLINES CO	9/1/1997	Jul-1995	Feb-1998	0	0	0	0	1	0	10-K	7/18/1996	1
TX	TCA CABLE TV INC	9/1/1997	Jul-1995	Feb-1998	0	0	0	0	0	1	DEF14A	3/28/1996	1
TX	TCA CABLE TV INC	9/1/1997	Jul-1995	Feb-1998	0	0	0	0	1	0	10-K	1/15/1998	0
WY	WAINOCO OIL CORP	7/1/1997	Jul-1995	Feb-1998	0	0	0	0	0	1	10-Q	4/1/1996	1
WY	WAINOCO OIL CORP	7/1/1997	Jul-1995	Feb-1998	0	0	0	0	1	0	NA	10/29/1997*	0
UT	UNION PACIFIC CORP	5/1/2000	Feb-2000	Feb-2002	0	0	0	0	0	1	DEF14A	11/1/2000	0
UT	FRANKLIN COVEY CO	5/1/2000	Feb-2000	Feb-2002	0	0	0	0	0	1	DEF14A	9/1/2000	0
MA	TERADYNE INC	7/1/2004	Jan-2004	Jan-2006	0	0	0	0	0	1	10-Q	9/3/2004	0
MA	MERCURY COMPUTER SYSTEMS	7/1/2004	Jan-2004	Jan-2006	0	0	0	0	1	0	Form 8-A12G	12/14/2005	0
MA	MKS INSTRUMENTS INC	7/1/2004	Jan-2004	Jan-2006	0	0	1	0	0	0	S-1/A	2/17/1999	1
Total:	20 unique firms, 23 provisions				0	1	1	0	9	12			16

This table provides information about the adoption dates across the six entrenchment provisions underlying the E-Index, along with the links to the original SEC filings. The last column reports the values of an indicator that equals one if the provision adoption precedes the UD law effective date in the state of incorporation. We fail to identify the public filings for two cases. For these two cases, we assume that the provision adoption took place in the midpoint of the window between the UD law effective date and the post-event ISS survey date (*). The Supplement provides page references and relevant text excerpts from the SEC filings.

Table 4
Corrected Frequency of Treated Firms Adopting Entrenchment provisions

Panel A: Treated Firms, All Incorporations.

	Corrected Frequency of Treated Firms Adopting Entrenchment Provisions						$\Delta(\text{EINDEX}) > 0$	OBS	% Adopt
	CB	SV	LB	LC	PP	GP			
Pennsylvania	0	0	0	0	0	1	1	27	3.7%
Massachusetts	0	0	0	0	1	1	2	18	11.1%
Virginia	0	0	0	0	0	0	0	17	0.0%
North Carolina	0	0	0	0	0	0	0	11	0.0%
Wisconsin	0	0	0	0	0	0	0	8	0.0%
Texas	0	0	0	0	1	0	1	7	14.3%
Connecticut	0	0	0	0	0	0	0	5	0.0%
Utah	0	0	0	0	0	2	2	5	40.0%
Iowa	0	0	0	0	0	0	0	4	0.0%
Other Adopting States	0	0	0	0	1	0	1	8	12.5%
Pooled	0	0	0	0	3	4	7	110	6.4%

Panel B: Treated Firms, In-State Incorporations.

	Corrected Frequency of Treated Firms Adopting Entrenchment Provisions						$\Delta(\text{EINDEX}) > 0$	OBS	% Adopt
	CB	SV	LB	LC	PP	GP			
Pennsylvania	0	0	0	0	0	1	1	24	4.2%
Massachusetts	0	0	0	0	1	1	2	18	11.1%
Virginia	0	0	0	0	0	0	0	12	0.0%
North Carolina	0	0	0	0	0	0	0	9	0.0%
Wisconsin	0	0	0	0	0	0	0	7	0.0%
Texas	0	0	0	0	1	0	1	7	14.3%
Connecticut	0	0	0	0	0	0	0	5	0.0%
Utah	0	0	0	0	0	1	1	4	25.0%
Iowa	0	0	0	0	0	0	0	4	0.0%
Other Adopting States	0	0	0	0	0	0	0	7	0.0%
Pooled	0	0	0	0	2	3	5	97	5.2%

Panel C: Treated Firms, In-State Incorporations Ex Dual-Class.

	Corrected Frequency of Treated Firms Adopting Entrenchment Provisions						$\Delta(\text{EINDEX}) > 0$	OBS	% Adopt
	CB	SV	LB	LC	PP	GP			
Pennsylvania	0	0	0	0	0	1	1	23	4.3%
Massachusetts	0	0	0	0	1	1	2	18	11.1%
Virginia	0	0	0	0	0	0	0	11	0.0%
North Carolina	0	0	0	0	0	0	0	7	0.0%
Wisconsin	0	0	0	0	0	0	0	6	0.0%
Texas	0	0	0	0	1	0	1	7	14.3%
Connecticut	0	0	0	0	0	0	0	3	0.0%
Utah	0	0	0	0	0	1	1	4	25.0%
Iowa	0	0	0	0	0	0	0	3	0.0%
Other Adopting States	0	0	0	0	0	0	0	6	0.0%
Pooled	0	0	0	0	2	3	5	88	5.7%

This table reports the corrected frequency of treated firms experiencing an increase in the E-Index across UD law adopting states of incorporation. We correct the entrenchment indicators based on the actual timing of the provision adoption and the effective date of UD laws using hand-collected data. We separate the nine adopting states with at least four observations (WI, VA, NC, CT, PA, TX, UT, IA, and MA) from other adopting states (MI, NE, ME, WY, ID, HI, and RI). The columns correspond to the six entrenchment provisions underlying the E-Index, including classified board (CB), supermajority voting (SV), limit bylaw (LB), limit charter (LC), poison pill (PP), and golden parachute (GP). Panel A reports the frequency distribution for the full sample. Panel B reports the frequency distribution for the subsample of firms with in-state incorporations; that is, excluding firms incorporated in a different state from that of their headquarters location. Appendix 2 provides detailed definitions.

Table 5
State-by-State DID Regression Results

Panel A: All Incorporations With Controls.

	<i>Dependent Variable = $\Delta EINDEX$</i>								
	WI	VA	NC	CT	PA	TX	UT	IA	MA
ITREAT	-0.1088	-0.029	-0.1542	-0.1063	-0.1109	0.0752	0.0261	-0.0198	0.0374
<i>t-stat</i>	<i>-3.60</i>	<i>-1.25</i>	<i>-4.27</i>	<i>-0.87</i>	<i>-3.70</i>	<i>2.72</i>	<i>0.19</i>	<i>-0.39</i>	<i>0.42</i>
<i>Wild p-value</i>	<i>0.06</i>	<i>0.41</i>	<i>0.13</i>	<i>0.10</i>	<i>0.07</i>	<i>0.89</i>	<i>0.97</i>	<i>0.60</i>	<i>0.80</i>
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sector FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Treated OBS	8	17	11	5	27	7	5	4	18
Control OBS	658	658	631	631	631	631	816	983	912
$\Delta EINDEX > 0$	0	0	0	0	1	1	2	0	2
$\Delta EINDEX = 0$	8	17	10	5	24	6	2	4	15
$\Delta EINDEX < 0$	0	0	1	0	2	0	1	0	1

Panel B: In-State Incorporations With Controls.

	<i>Dependent Variable = $\Delta EINDEX$</i>								
	WI	VA	NC	CT	PA	TX	UT	IA	MA
ITREAT	-0.088	-0.0343	-0.1665	-0.0707	-0.1666	0.0821	-0.1398	-0.0596	0.0784
<i>t-stat</i>	<i>-0.80</i>	<i>-0.63</i>	<i>-2.37</i>	<i>-1.00</i>	<i>-3.65</i>	<i>1.74</i>	<i>-1.40</i>	<i>-1.22</i>	<i>1.59</i>
<i>Wild p-value</i>	<i>0.35</i>	<i>0.55</i>	<i>0.33</i>	<i>0.25</i>	<i>0.09</i>	<i>0.76</i>	<i>0.66</i>	<i>0.57</i>	<i>0.49</i>
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sector FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Treated OBS	7	12	9	5	24	7	4	4	18
Control OBS	150	150	135	135	135	135	158	191	173
$\Delta EINDEX > 0$	0	0	0	0	1	1	1	0	2
$\Delta EINDEX = 0$	7	12	8	5	21	6	2	4	15
$\Delta EINDEX < 0$	0	0	1	0	2	0	1	0	1

Panel C: In-State Incorporations Ex Dual-Class With Controls.

	<i>Dependent Variable = $\Delta EINDEX$</i>								
	WI	VA	NC	CT	PA	TX	UT	IA	MA
ITREAT	-0.1369	-0.0353	-0.2057	-0.0703	-0.2139	0.0768	-0.0383	-0.1469	0.0941
<i>t-stat</i>	<i>-1.11</i>	<i>-0.51</i>	<i>-1.96</i>	<i>-0.76</i>	<i>-3.80</i>	<i>1.25</i>	<i>-0.46</i>	<i>-3.03</i>	<i>1.97</i>
<i>Wild p-value</i>	<i>0.21</i>	<i>0.58</i>	<i>0.35</i>	<i>0.36</i>	<i>0.02</i>	<i>0.71</i>	<i>0.90</i>	<i>0.20</i>	<i>0.43</i>
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sector FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Treated OBS	6	11	7	3	23	7	4	3	18
Control OBS	136	136	118	118	118	118	134	166	157
$\Delta EINDEX > 0$	0	0	0	0	0	1	1	0	2
$\Delta EINDEX = 0$	6	11	6	3	21	6	2	3	15
$\Delta EINDEX < 0$	0	0	1	0	2	0	1	0	1

Panel C: In-State Incorporations Ex Dual-Class Without Controls.

	<i>Dependent Variable = $\Delta EINDEX$</i>								
	WI	VA	NC	CT	PA	TX	UT	IA	MA
ITREAT	0.004	-0.0139	-0.156	-0.0578	-0.2003	0.1129	-0.1272	-0.0692	0.1000
<i>t-stat</i>	<i>0.04</i>	<i>-0.14</i>	<i>-1.55</i>	<i>-1.32</i>	<i>-3.55</i>	<i>2.33</i>	<i>-1.73</i>	<i>-2.00</i>	<i>1.81</i>
<i>Wild p-value</i>	<i>0.96</i>	<i>0.82</i>	<i>0.55</i>	<i>0.53</i>	<i>0.01</i>	<i>0.66</i>	<i>0.58</i>	<i>0.28</i>	<i>0.39</i>
Controls	NO	NO	NO	NO	NO	NO	NO	NO	NO
Sector FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Treated OBS	6	11	7	3	23	7	4	3	18
Control OBS	136	136	118	118	118	118	134	166	157
$\Delta EINDEX > 0$	0	0	0	0	0	1	1	0	2
$\Delta EINDEX = 0$	6	11	6	3	21	6	2	3	15
$\Delta EINDEX < 0$	0	0	1	0	2	0	1	0	1

Panels A and B report DID regression results using all and in-state incorporations with firm-level controls. Panel C removes dual-class companies from the in-state incorporation sample. The DID regression analysis focuses on the corrected changes in the E-Index between consecutive ISS surveys centered on the effective date of UD laws across adopting states. We correct the entrenchment indicators based on the actual timing of the provision adoption and the effective date of UD laws using hand-collected data. We focus on the nine adopting states with at least four observations: WI, VA, NC, CT, PA, TX, UT, IA, and MA. The vector of firm-level controls includes log total assets, financial leverage, cash holdings, R&D intensity, and capital expenditure. of the continuous predictors. The sample includes 650 firm-quarter observations from 2011:Q1 to 2017:Q4. We report t-statistics based on clustered standard errors by state of incorporation with a degree-of-freedom adjustment. We report wild bootstrapped p-values using two-tailed tests.

Table 6
Past Performance Leading to Original Governance Provision Adoption

Panel A: All Incorporations.

	Market-Adjusted Returns		Factor-Adjusted Returns	
	One Year	Two Years	One Year	Two Years
EW Return	-17.8%	-38.4%	-14.9%	-35.7%
VW Return	-16.0%	-34.4%	-13.4%	-30.8%
Std. Dev.	26.6%	44.0%	26.4%	39.5%
OBS	19	19	19	19

Panel B: In State Incorporations Ex Dual-Class.

	Market-Adjusted Returns		Factor-Adjusted Returns	
	One Year	Two Years	One Year	Two Years
EW Return	-19.7%	-38.3%	-16.9%	-35.2%
VW Return	-18.6%	-33.8%	-16.1%	-29.3%
Std. Dev.	26.1%	45.2%	25.7%	40.6%
OBS	18	18	18	18

This table reports equal-weighted (EW) and value weighted (VW) mean cumulative returns for the one- and two-year windows leading to the adoption of entrenchment provisions. The sample covers the group of treated firms incorporated in UD law adopting states that experiencing a post-UD law increase in their E-Index. To measure the cumulative stock return performance, we use entrenchment provision dates as identified in our hand-collected data. We obtain stock return data from CRSP and report market-adjusted returns as well as size and B/M factor-adjusted returns using the Fama-French 5×5 portfolio breakpoints.

Supplement: Table A1
Replication of Appel (2019)

Panel A: Sample Construction.

Steps	OBS.
US-firms in Compustat from 1990 to 2006 with non-missing state of incorporation and headquarter data	99,316
Exclude Financials, Utilities, and unclassified SIC	77,752
Exclude time-varying incorporations	71,424
Exclude firms with missing financials and block holder data	60,983
Exclude firms that were never covered in ISS data	25,942
Exclude missing ISS data after backfilling the gap years	18,162

Panel B: Descriptive statistics.

Variable	Obs.	Mean	Std. Dev.	Median
E-Index	18,162	2.11	1.32	2.00
Golden Parachute	18,162	0.59	0.49	1.00
Classified Board	18,162	0.59	0.49	1.00
Poison Pill	18,162	0.57	0.50	1.00
Limit Bylaw	18,162	0.17	0.38	0.00
Supermajority Voting	18,162	0.17	0.38	0.00
Limit Chater	18,162	0.02	0.15	0.00

Panel C: Replication.

	<i>Dependent Variable = E Index</i>	
I(TREAT)	0.1479**	0.1507**
<i>t-stat</i>	<i>2.07</i>	<i>2.15</i>
Controls	No	Yes
Firm FE	Yes	Yes
Year & Ind. FE	Yes	Yes
Adj. R2	87.2%	87.2%
OBS.	18,162	18,162

This table replicates Appel's (2019) sample construction and baseline results. Panel A describes the sample construction steps. Panel B reports the descriptive statistics. Panel C replicates Appel's (2019) regression results and provide consistent evidence that the adoption of UD laws is associated with an overall increase in the E-Index. The vector of firm-level controls includes log total assets, financial leverage, cash holdings, R&D intensity, and capital expenditure. Standard errors clustered by state of incorporation. ** indicates statistical significance at the 5% level using two-tailed tests.

Supplement: Table A2
Identifying the Adoption Dates of Entrenchment Provisions: Detailed References

State Inc.	Company Name	Adoption Type	Filings	Provision Adopt. Date
MS	FIRST MISSISSIPPI CORP	Supermajority Voting	<u>10-K</u>	9/26/1990
Amendment to Article IX (pp. 151): "The affirmative vote or consent of the holders of not less than four-fifths of the outstanding shares of stock of this corporation (the "Corporation") entitled to vote in elections of directors shall be required: (1) to adopt any agreement for, or to approve, the merger or consolidation of the Corporation or any subsidiary . . .with or into any other person. . ."				
CT	GERBER SCIENTIFIC INC	Golden Parachute	<u>DEF14A</u>	4/28/1995
Exhibit A. 1992 EMPLOYEE STOCK PLAN, AS AMENDED AND RESTATED AS OF APRIL 28, 1995 - ARTICLE 2 (pp. A-2): "The purpose of this Plan is to offer as an additional incentive to the officers and other key Employees who are the most responsible for the growth and success of the Company and its Subsidiaries, the opportunity to increase their proprietary interest in the Company under conditions which will encourage their continued employment in the service of the Company or its Subsidiaries and to recognize and reward their contribution to creating shareholder value."				
PA	SUN INC	Poison Pill	<u>8-K</u>	2/1/1996
Item 7. Financial Statements and Exhibits. Exhibit 99(a): The Shareholder Rights Plan [is] "designed to protect shareholders against unsolicited takeover attempts that do not offer an adequate price to all shareholders or are otherwise not in the best interests of the company and its shareholders."				
PA	CBS CORP	Poison Pill	<u>10-K</u>	12/29/1995
Common Shares (pp. 50): "On December 29, 1995, the Board of Directors adopted a shareholder rights plan providing for the distribution of one right for each share of common stock outstanding on January 9, 1996 or issued thereafter until the occurrence of certain events. The rights become exercisable only in the event, with certain exceptions, that an acquiring party accumulates 15% or more of our voting stock or a party announces an offer to acquire 30% or more of the voting stock."				
PA	CBS CORP	Golden Parachute	<u>DEF14A</u>	11/28/1995
COMPENSATION AND SEVERANCE ARRANGEMENTS (pp. 28): "If Mr. Lund is terminated for a reason other than cause, or if he elects to terminate the agreement for good reason as defined in the agreement (which includes a change in control of the Company, removal from his title or position as president and chief executive officer of CBS, a diminution of his authority for the operation and management of CBS, or requiring him to report to someone other than the Company's chief executive officer), all of Mr. Lund's options granted will vest, and he will be entitled to receive immediately a lump-sum payment equal to the greater of (i) the balance of all remaining unpaid base salary and guaranteed bonus amounts through the end of the contract term, or (ii) severance pay in accordance with CBS's present policy, but in no event less than one year's base salary at the then-existing rate plus the guaranteed bonus for that year."				
PA	CROWN CORK & SEAL CO INC	Poison Pill	<u>8-A</u>	8/7/1995
Item 1. Description of Securities to be Registered (pp.4): "The Rights have certain anti-takeover effects. The Rights will cause substantial dilution to a person or group that attempts to acquire the Company without conditioning the offer on a substantial number of Rights being acquired. Accordingly, the existence of the Rights may deter certain acquirors from making takeover proposals or tender offers. However, the Rights help ensure that the Company's shareholders receive fair and equal treatment in the event of any proposed				

takeover of the Company. The execution of the Rights Agreement by the Company is not in response to any specific takeover threat or proposal, but is a precaution taken to protect the rights of the Company's shareholders."

PA	ARMSTRONG WORLD INDUSTRIES INC	Golden Parachute	<u>DEF14A</u>	3/18/1997
Change in Control and Termination of Employment Agreements (pp. 12): "The purpose of the agreements is to foster the continued employment of key officers by allowing them to focus attention on their assigned responsibilities without distraction in the event of circumstances arising from the possibility of a change in control of the Company."				
PA	CHARMING SHOPPES INC	Golden Parachute	<u>DEF14A</u>	5/23/1996
MANAGEMENT COMPENSATION -- Employment, Change of Control and Severance Agreements (pp. 15): "If Ms. Bern resigns upon a Change of Control, she will be entitled to post-termination compensation on these same terms for a period of two years, subject to the Mitigation Reduction. If within 12 months following a Change of Control, Ms. Bern's employment is terminated by her for Good Reason or if her employment is terminated without Cause then, in lieu of any other severance payments under the Agreement, the Company will pay Ms. Bern on termination a lump sum amount equal to 2.5 times her "base amount" within the meaning of Section 280G(b)(3) of the Internal Revenue Code of 1986, as amended."				
PA	CHECKPOINT SYSTEMS INC	Golden Parachute	<u>DEF14A</u>	7/1/1995
Compensation of Directors (pp. 7): Each Agreement provides that upon termination of employment in certain circumstances the executive would be entitled to severance pay of not less than twelve months of base salary and not more than eighteen months of base salary plus health insurance benefits during such period. A change- in- control of the Company (as defined in the Agreement) or a change in the responsibilities or duties of the executive could result in severance payments to the executive under the Agreement.				
PA	MINE SAFETY APPLIANCES CO	Poison Pill	<u>10-K</u>	2/10/1997
Exhibit 4 (pp. 28) (Rights Agreement Dated February 10, 1997): "The company has a Shareholder Rights Plan under which each outstanding share of common stock is granted one-third of a preferred share purchase right. The rights are exercisable for a fraction of a share of preferred stock, only if a person or group acquires or commences a tender offer for 15% or more of the company's common stock. In the event a person or group acquires 15% or more of the outstanding common stock, each right not owned by that person or group will entitle the holder to purchase that number of shares of common stock having a value equal to twice the \$225 exercise price."				
PA	GLATFELTER P H CO	Golden Parachute	<u>DEF14A</u>	3/13/1997
APPROVAL OF AMENDMENTS TO THE 1992 KEY EMPLOYEE LONG- TERM INCENTIVE PLAN (pp. 6): "The Long-Term Incentive Plan, as amended, is designed to enable the Company to offer key employees and directors of the Company and its subsidiaries equity interests in the Company and other incentive awards in order to attract, retain, and reward such individuals and to strengthen the mutuality of interests between such individuals and the Company's shareholders."				
PA	INTELLIGENT ELECTRONICS INC	Poison Pill	<u>10-K</u>	3/8/1996
Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA - Shareholders' Rights Plan: "In the event that (i) the Company is the surviving corporation in a merger with an Acquiring Person and shares of Company Common Stock remain outstanding, (ii) a person becomes the beneficial owner of 15% or more of the then outstanding shares of Company Common Stock, (iii) an Acquiring Person engages in one or more "self-dealing" transactions as set forth in the Rights Agreement, or (iv) during such time as there is an Acquiring Person, an event occurs which results in such Acquiring Person's ownership interest being increased by more than 1%, then each holder of a right will have the right to receive, upon exercise, Units of Preferred Stock having a current market value equal to two times the exercise price of the right."				

TX	SOUTHWEST AIRLINES CO	Poison Pill	<u>10-K</u>	7/18/1996
Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA - 12. COMMON STOCK (pp. 48): "Pursuant to the Agreement, each outstanding share of the Company's common stock is accompanied by one common share purchase right (Right). Each Right is exercisable only in the event of a proposed takeover, as defined by the Agreement. The Company may redeem the Rights at \$.0022 per Right prior to the time that 15 percent of the common stock has been acquired by a person or group. The Agreement is not applicable to a fully-financed or cash tender offer for all of the Company's shares of common stock, which remains open for at least 60 calendar days, is at a price equal to the higher of (a) 65% over the average closing price of the common stock during the 90 days preceding the offer and (b) the highest closing price during the 52 weeks preceding the offer, and is accompanied by a written fairness opinion of a nationally recognized investment banking firm. If the Company is acquired, as defined in the Agreement, each Right will entitle its holder to purchase for \$3.29 that number of the acquiring company's or the Company's common shares, as provided in the Agreement, having a market value of two times the exercise price of the Right. The Rights will expire no later than July 30, 2005.				
TX	TCA CABLE TV INC	Poison Pill	<u>10-K</u>	1/15/1998
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - 17. Subsequent Events (pp. 40): "On January 15, 1998, the Company's Board of Directors adopted a Shareholder Rights Plan (the "Rights Plan"). In connection with the adoption of the Rights Plan, the Board declared a dividend of one preferred share purchase right for each outstanding share of Company Common Stock. Each Right, which is not presently exercisable, entitles the holder to purchase one one-thousandth of a share of Series A Junior Participating Preferred Stock at an exercise price of \$170. In the event that any person acquires 15 percent or more of the outstanding shares of Common Stock, each holder of a Right (other than the acquiring person or group) will be entitled to receive, upon payment of the exercise price, that number of Common Stock having a market value equal to two times the exercise price."				
TX	TCA CABLE TV INC	Golden Parachute	<u>DEF14A</u>	3/28/1996
EXECUTIVE COMPENSATION - EMPLOYMENT AGREEMENTS (pp. 12): "The Employment Agreements provide that in the event the employee is terminated by the Company for any reason following a change of control or the employee terminates his employment due to a Constructive Termination following a change of control, the employee shall be entitled to receive an amount of cash equal to 2.99 times the employee's average annual compensation during the previous five full taxable years and insurance benefits substantially similar to those received immediately prior to termination for the employee and his immediate family. The Company is also obligated to pay legal fees and expenses incurred by the employee to enforce the change of control provision."				
WY	WAINOCO OIL CORP (Frontier Oil Corp)	Golden Parachute	<u>10-Q</u>	4/1/1996
Executive Employment Agreement – Termination (pp. 13): "7.02 In the event of a Termination the Company shall, as liquidated damages or severance pay, or both, pay to the Executive and provide him, his dependents, beneficiaries and estate, with the following: (a)..."				
UT	UNION PACIFIC CORP	Golden Parachute	<u>DEF14A</u>	11/1/2000
Change in Control Arrangements (pp.35): "In November 2000, the Board of Directors adopted a Change in Control policy to provide the Company with a smooth transition of management and continuing operations throughout a Change in Control transaction. The Key Employee Continuity Plan (the Continuity Plan) provides severance benefits to 34 senior level executives of the Company and its subsidiaries in the event a Change in Control occurs."				
UT	FRANKLIN COVEY CO	Golden Parachute	<u>DEF14A</u>	9/1/2000
EMPLOYMENT AGREEMENTS (pp. 10): "The Company does not have an employment agreement with any of its named executive officers, other than Robert A. Whitman, the President, Chief Executive Officer and Chairman of the Board . . . In the event there is a				

change in control of the Company as defined in the Agreement that is not approved by the current board of directors or successor directors nominated by at least a two-thirds majority of existing directors, and, during the 24 month period following the date of the change in control, Mr. Whitman's employment is terminated for any reason other than cause, or by Mr. Whitman for good reason, as defined in the agreement, the Company will pay all termination amounts set forth above to Mr. Whitman and, in addition, all of the options held by Mr. Whitman will immediately vest and become exercisable. If the change of control has been approved by the incumbent board, 801,000 shares of any non-vested options shall become immediately vested."

MA	TERADYNE INC	Golden Parachute	<u>10-Q</u>	9/3/2004
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EX 10.45 - Termination Benefits and Covenants (pp. 4): "the Company shall provide the following Termination Benefits to the Executive if his employment with the Company is terminated by the Company for any reason other than for Death, Disability, or Cause, regardless of whether prior to, following or relating to a Change of Control.

(a) Continued Payments: The Company shall pay the Executive a monthly amount equal to 1/12th of his current annual Model Compensation as of the Date of Termination for a period of twenty-four (24) months from the Date of Termination (the "Severance Period"). Except as otherwise expressly provided herein, under no circumstances shall the Executive receive more than a total of twenty-four (24) months of payments under this Agreement. All such continued payments shall be in accord with the Company's usual model compensation pay practices."

MA	MERCURY COMPUTER SYSTEMS	Poison Pill	<u>Form 8-A12G</u>	12/14/2005
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Item 1. Description of Registrant's Securities to be Registered (pp. 2): "We have adopted a Shareholder Rights Plan, the purpose of which is, among other things, to enhance the ability of our board of directors to protect the interests of our shareholders and to ensure that shareholders receive fair treatment in the event any coercive takeover attempt of Mercury is made in the future. The Shareholder Rights Plan could make it more difficult for a third party to acquire, or could discourage a third party from acquiring, Mercury or a large block of Mercury's common stock."

MA	MKS INSTRUMENTS INC	Limit Bylaw	<u>S-1/A</u>	2/17/1999
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Risk Factors (pp. 14) and ARTICLE VIII - Amendments: Changed as part of its IPO, apparently to maintain family control: "Upon consummation of this offering, John R. Bertucci, Chairman, Chief Executive Officer and President of MKS, and members of his family will, in the aggregate, beneficially own approximately % of our outstanding common stock. As a result, these stockholders, acting together, will be able to take any of the following actions without the approval of our public stockholders:

- amend our Articles of Organization in certain respects or approve a merger, sale of assets or other major corporate transaction
- defeat any non-negotiated takeover attempt that may be beneficial to our public stockholders
- determine the amount and timing of dividends paid to themselves and to our public stockholders
- otherwise control our management and operations and the outcome of all matters submitted for a stockholder vote, including the election of directors"