Shareholder Litigation and Bank Risk*

Marta Degl'Innocenti[a], Franco Fiordelisi[b], Wei Song[c], Si Zhou[d]

Abstract

Does a decrease in shareholder litigation enhance managers' monitoring efforts by ensuring adequate firm risk management? We explore how state universal demand (UD) laws (which limit shareholder litigation as a mechanism to discipline managers), affect bank holding companies' (BHCs) risk. Using a difference-in-differences analysis, we show that BHCs reduce their tail risk exposures after the implementation of UD laws, which is achieved by improving loan asset quality. Indeed, BHCs appear to apply stricter contract terms for syndicate loans to risky and opaque borrowers. We also show that UD law implementation leads to changes in BHC board composition by increasing the proportion of outside directors, the number of independent directors in audit committees and the number of independent directors with financial expertise.

Keywords: *Derivative lawsuits, Universal demand, BHCs, Risk, Lending, Syndicate loans, Board of directors*

JEL Classifications: G18, G21, G28

[a]Department of Economics, Management and Quantitative Methods, Università Degli Studi di Milano, Via Conservatorio 7, 20122 Milan, Italy. Email: marta.deglinnocenti@unimi.it
[b]Essex Business School, University of Essex, Wivenhoe Park, Colchester, CO4 3SQ, UK. franco.fiordelisi@essex.ac.uk
[c]Nottingham University Business School, University of Nottingham, Wollaton Rd, Lenton, Nottingham, NG8 1BB, UK. Email: Wei.Song@nottingham.ac.uk
[d]School of Economics, Shanghai University, No.99, Shangda Road, Shanghai, 200444, P.R. China. Email: szhou@shu.edu.cn

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1. Introduction

Shareholder litigation rights have an important impact on corporate activities, such as initial public offering (IPO) (Lowry and Shu, 2002), debt policy (Ni and Yin, 2018), real earnings management (Huang et al., 2020), accounting conservatism (Manchiraju et al., 2021), information transparency (Boone et al., 2021), payout policy (Arena and Julio, 2021), corporate takeovers (Chu and Zhao, 2021) and corporate social responsibility (CSR) (Freund et al., 2021). Previous studies have argued that shareholders' lawsuits against managers could serve as a mechanism to monitor the board of directors and elicit corrective action for management wrongdoing[1]. Indeed, the threat of shareholder litigation reduces agency problems stemming from the divergence of interests between shareholders and management. By signaling to the existence of agency problems to the market, initiating shareholder litigations can also indirectly force a firm to refashion its own governance. Such action could push shareholders to discipline management regardless of the outcome of the litigation process (Roman et al., 1991; Donelson and Yust, 2014; Liu et al., 2016). Coincidentally, the threat of shareholder litigation may encourage directors to work more diligently, thereby weakening moral hazard incentives to engage in excessive risk-taking activities (Ni and Yin, 2018).

Yet there is evidence showing that the threat of forced replacement and reputation damages associated with shareholder litigation can also result in managers pursuing conservative corporate policies (Arena and Julio, 2015) instead of risk-increasing but value-enhancing projects against shareholders' interests (Nguyen et al., 2018, 2020; Lin et al., 2019). According to these studies, a

[1] Shareholder litigation mainly consists of securities class action and derivative lawsuits. In securities class action lawsuits, a subset of shareholders initiates a lawsuit when there is a sudden decrease in stock price that could be associated with alleged securities fraud. In this case, any cash settlement goes to the shareholders. Conversely, shareholders initiate a derivative lawsuit on behalf of the corporation against a breach their fiduciary duties, typically alleged actions by directors and officers. In this case, any settlement goes to the corporation after paying the plaintiff's attorney fees.

high level of legal liability exposure could cause directors to make poor choices due to a lack of effort in decision-making and/or board members' quality (e.g., Nguyen et al., 2020: Masulis et al., 2020). It then follows that the reduction of shareholder litigation risk may boost the quality and effectiveness of directors' business decisions.

As a novel contribution, this paper explores whether and how a decline in shareholder litigation risk may influence banks' risk-taking behavior. The very nature of banks' business activities makes this question an important issue to analyze. The alignment of managers and shareholders' interests may strengthen the so-called "equity governance" in banks and exacerbate the prominent divergence of interests between shareholders and debtholders (depositors) in banks (Kose et al., 2016). To investigate how shareholder litigation may affect banks' risk, we empirically analyze a sample of 976 bank holding companies (BHC, hereafter) over the 1986-2008 period and exploit the plausibly exogenous variation of the threat of derivative suits generated by the staggered adoption of universal demand (UD) laws across the US to examine the causal effect of changes to shareholder litigation risk on BHCs' risk management. In response to the futility of most derivative lawsuits, 23 of 50 states implemented UD laws from 1989 to 2005, which weakened the strong shareholder protection mechanism. UD laws require that the plaintiff shareholder receive board support before commencing a derivative suit. Following the passage of UD laws, the probability of derivative suits has consequently dropped by approximately 40% since boards of directors have largely refused shareholders' requests (Appel, 2019). As fewer derivative lawsuits have been fulfilled, the litigation risk pertaining to derivative lawsuits has significantly decreased significantly in states that have implemented UD laws.

For this analysis, we estimate the effect of the implementation of UD laws by conducting a difference-indifferences (DiD) analysis of tail risk, where the treated group consists of BHCs

whose state of incorporation is adopted a UD law and the control group consists of other BHCs. Our findings indicate that reducing the threat of derivative suits decreases BHCs' tail risks. We complement our baseline model results by also presenting similar results for BHCs' total and idiosyncratic risks. In terms of economic magnitude, we find that treated banks' tail risk, idiosyncratic risk and total risk decline by approximately 5.66%, 6.42% and 6.20%, respectively, relative to the sample means. Our findings are also robust when we conduct a dynamic DiD analysis (Bertrand and Mullainathan, 2003) to examine whether the observed improvements in BHCs' risk in treatment relative to control firms occurred prior to UD law adoption. Moreover, our findings are robust when we require performance-size-year matched control firms to be headquartered in an adjacent state. As noted by Masulis et al. (2020), this approach allows us to have both treatment and control BHCs exposed to the same economic environment. Then, we also account for the possibility that our baseline results are driven by some confounding legal changes (Chu et al., 2017).

We further provide possible mechanisms that can explain the observed decrease in BHC risk. Specifically, we explore whether the passage of UD laws may have pushed managers to engage in less risky behavior and favored more prudential decisions by focusing on monitoring activities and lending decision-making. Exerting adequate monitoring efforts in the lending process is crucial to preventing the adoption of excessive risk-seeking corporate policies that may result in an increased systemic risk contribution by financial institutions (Cebenoyan and Strahan, 2004; Chava and Purnanandam, 2010).

Regarding portfolio lending quality, we maintain that the decrease in bank tail risk could be associated with a corresponding decrease in credit risk. Credit risk is vital for banks' survival since it is related to the likelihood of future financial crises (Acharya et al., 2018). Any observed

decrease in credit risk would be consistent with managers exerting more monitoring effort. Specifically, we advance two possible explanations for the effect of UD law implementation on asset quality. First, we maintain that banks may require more stringent covenant-based monitoring requirements and set stricter contractual conditions for riskier and opaque borrowers. In line with Gustafson et al. (2021), we argue that covenants substitute for monitoring in lending contracts. Therefore, a higher covenant intensity and number of covenants embedded in lending contracts indicate that lenders are more conscious of the borrower's risk profile and exert more monitoring effort. In summary, we posit that lenders can better disentangle riskier from safer borrowers by setting different lending conditions according to their risk profiles.

For this latter analysis, we match syndicated loan data retrieved from DealScan, lead bank information from Call Report and borrower characteristics from Compustat. Our final sample encompasses a rich set of variables that allow us to account for both loan supply and loan demand. This helps us isolate the supply effects originating from UD law implementation. The results of all empirical analyses are consistent with the monitoring view that BHCs incorporated in states that adopted UD laws set tight financial and general covenants in this manner, thereby restricting borrowers' behaviors. Additionally, we find that BHCs in states that adopted UD laws are more likely to fix higher interest rates and costs of loans for risky and opaque borrowers. In a further test, we explore loan renegotiation dynamics. Our findings indicate that BHCs in states adopting UD laws also tend to engage less in contract renegotiation related to increased interest rates, suggesting that they can cope better with asymmetric information problems with borrowers.

As another explanation for the improvement of loan quality, we posit that banks may attain a reduction in credit risk through the removal of credit access to relatively risky borrowers. Following Acharya et al. (2018), we explore the effect of UD laws on different credit categories

as reported in call reports. Consistent with our expectations, our findings show that the weakening of the threat of derivative suits improves the overall lending quality portfolio. Specifically, BHCs appear to decrease the supply of real estate credit and mortgage-backed securities, which is typically one of the riskiest bank loan categories because it is strongly associated with bank failure (e.g., Cole and White, 2012; Berger and Bouwman, 2013; Berger et al., 2016). We also show that after UD law implementation, BHCs diminish the volume of credit card loans, which usually present high charge-off rates (e.g., Harris et al., 2018).

As an additional analysis, we explore whether banks may have adjusted their board compositions due to the passage of UD laws. While the improvement of risk management may be driven by increased efforts in decision-making and credit monitoring, it could also be that board members' quality improved (Ferris et al., 2007, Erickson, 2010, Masulis et al., 2020). For this analysis, we construct five measures of bank board composition using BoardEx data: *Board Size*, *Board Independence*, *Independent Audit Committee*, *Audit Committee Size* and *Independent Board Financial Expertise*. In line with our expectations, we find that after the adoption of UD laws, BHCs have greater outside representation, a greater number of independent directors with financial expertise, larger audit committees and a larger number of independent directors in their audit committees.

This study contributes to past research in various ways. First, it contributes to the literature on corporate governance in financial institutions. Previous studies have mainly investigated the link between bank governance and bank regulation by focusing on topics such as ownership concentration and ownership limitation in the market for corporate control, such as hostile takeovers and monitoring by debtholders (see Kose et al. (2016) for an extended literature review). However, the extant literature remains silent on whether and how the change in shareholder

litigation threat may affect bank risk taking and credit supply. Past work has shown that the decline in the threat of derivative litigation reduces crash risks and information hoarding associated with earnings management (Obaydin et al., 2021), encourages corporate disclosure (Bourveau et al., 2017), is associated with higher financial leverage that enhances firm value (Nguyen et al., 2018, 2020) and increases the quality of outside directors (Masulis et al., 2020). Conversely, other studies have shown that weakening shareholder litigation rights causes a significant increase in the cost of debt (Ni and Yin, 2018) and that strong shareholder rights strengthen the position of boards of directors (Ferris et al., 2017; Ferris and Yan, 2007). The literature focusing on class action suits offers mixed results on the cost of loans as well (e.g., Chu et al., 2017; Deng et al., 2014).

Second, our study also provides novel evidence regarding the relationship between shareholder rights and managerial effort. Specifically, our paper is the first to demonstrate that weakening derivative suits also leads managers to play it safe by reducing their firms' risks and dedicating more monitoring efforts to credit supply. The present work also bridges the research on shareholder litigation and syndicate loans by showing that a decrease in shareholder litigation rights affects the use of covenant-based monitoring (see, e.g., Sufi, 2009; Wang and Xia, 2014; Gustafson et al., 2021) and other features of loan contracts (e.g., loan maturity and loan spreads) (e.g., Sufi, 2007; Ivashina, 2009; Berg et al., 2016).

Finally, we provide nuanced evidence for the ongoing debate on the effect of derivative suits on corporate governance (Ferris et al., 2007; Ni and Yin., 2018; Masulis et al., 2020). We contribute to this stream of research by showing that BHCs can compensate for weaker shareholder litigation rights by improving board structure — especially board quality (e.g., in terms of the financial expertise of independent directors) and the presence of independent directors on boards and audit committees (Defond et al., 2005; Güner et al., 2008).

The remainder of the paper is organized as follows. Section 2 discusses the relevant institutional background. Section 3 provides a literature review. Section 4 describes our data and the construction of our sample and empirical strategy. Section 5 presents the baseline empirical results. Section 6 examines changes made to the lending portfolio, while Section 7 explores changes in board composition. Finally, Section 8 concludes.

2. Institutional background

Shareholders can take legal action to protect their rights when managers and directors do not act to maximize shareholder value. When directors breach their fiduciary duties, they may be subject to shareholder suits. In contrast to class action lawsuits, which are filed by a subset of shareholders, derivative lawsuits (as the name "derivative" implies) are brought on behalf of a corporation against the wrongdoings of management. Derivative suits are raised for a variety of reasons, including misreporting, insider trading, dubious M&A deals, excessive executive compensation, or boards failing to prevent misconduct (Erickson, 2010). With the introduction of the 1995 Private Securities Litigation Reform Act (PSLRA), which limits shareholders' abilities to file class action lawsuits, there has been a spike in derivative lawsuit procedures. Many shareholders have diverted their efforts from class action lawsuits to derivative lawsuits in the post-PSLRA period (Erickson, 2010).

Specifically, all shareholders' allegations are examined by a corporation's board of directors, which should provide their approval to proceed with litigation. While directors are almost inevitably inclined to decide against any litigation procedure since most allegations concern directors' wrongdoings, courts have introduced the "futility exception" to overcome the fact that management could wrongfully freeze out shareholders' requests. In particular, the "futility

exception" allows plaintiff shareholders to initiate derivative suits without board consent. This can occur when shareholders can prove to the court that making a demand to the board would be futile. Such exceptions can be easily satisfied if plaintiff shareholders nominate the majority of or all directors as defendants such that the board cannot express an unbiased judgement on their demand.

Because of this "futility excerption," the use of derivative lawsuits has been abused, which has resulted in the wasting of both corporations' and courts' time and money (Masulis et al., 2020). To bypass the "futility exception," in 1988, the American Law Institute (ALI) requested to eliminate the futility exception in derivative actions and demand on the board be universally required (so-called "universal demand"). Similarly, in 1989, the American Bar Association (ABA) included the universal demand recommendation in its revised Model Business Corporation Act (MBCA, 2016). Several states adopted the UD concept from the proposal by the ABA in the MBCA.[2] The UD provision has standardized the procedure by requiring the plaintiff shareholders to place a demand on the board for corrective actions before any derivative lawsuit can be filed (Manchiraju et al., 2021) and, accordingly, whether the lawsuit can proceed further is thus determined by the board's response to the claim. In practice, because some board members are usually named as defendants, the directors almost always reject the demand to proceed (Swanson, 1993). One exception to the demand requirement is that the shareholders are entitled to argue demand futility if they indicate that the board of directors cannot evaluate the demand impartially (Houston et al., 2018). The plaintiff shareholder can thereby circumvent the board and file a demand-excused suit once the demand requirement is ruled futile. However, prior studies have demonstrated that it is unlikely that the court will second-guess a board's refusal to reject a shareholder's demand if the judgement is made by disinterested and independent directors (e.g.,

[2] We refer to UD laws to be consistent with prior studies.

Moodie, 2004; Masulis et al., 2020). Houston et al. (2018) suggest that compared to making a demand, shareholders are more likely to argue demand futility due to the potential conflicts of interest of boards as well as the courts' unwillingness to overturn demand refusal.

As presented in Table 1, from 1989 to 2005, 23 out of 50 states in the United States adopted UD laws with different effective years. Previous studies have generally found that the adoption of UD laws does not appear to be driven by political economy considerations or lobbying activities (e.g., Nguyen et al., 2018; Ni and Yin, 2018; Manchiraju et al., 2021). Following the adoption of UD laws, the plaintiff shareholder is allowed to proceed with a derivative lawsuit only if the board of directors (and specifically disinterested independent directors) grants their demand. The existing literature also provides empirical evidence confirming that with the removal of the futility exception, the threat of derivative lawsuits has significantly reduced. For example, Ferris et al. (2007) find that the number of filings increases from the mid-1980s (which is consistent with the easing of the liability insurance crisis in the late 1980s) and then declines in the 1990s. Appel (2019) points out that the enactment of UD laws presents a significant obstacle to derivative lawsuits. Specifically, by manually searching litigation from 10-K filings for 820 firm-year observations with derivative litigation in the Compustat-CRSP sample over the period 1994-2010, he finds that the introduction of UD laws is associated with a 0.6 percentage point reduction in the likelihood of deviation litigation. This suggests an approximately 43% drop relative to the sample mean of 1.4 percentage points. In a similar vein, Lin et al. (2021) investigate derivate lawsuit cases from the Audit Analytics database between 2000 and 2013 and find that the introduction of UD laws leads to a 14% reduction in the number of derivative lawsuits. Overall, the findings of previous studies suggest that shareholders' litigation rights have been considerably weakened following the passage of UD laws.

[Please insert Table 1 here]

3. Literature review

In the banking literature, it is well known that banks act as delegated monitors since they collect information and monitor the firms they lend to on behalf of other investors (Diamond, 1984). As noted by Acharya et al. (2018), the quality of monitoring and information collection can be endogenous choice of a bank and can reflect agency conflicts between equity holders and debtholders. On this matter, prior studies (Macey and O'Hara, 2003; Laeven, 2013) have highlighted that these agency costs are likely to be more pronounced in banks than in other firms. Banks are highly leveraged institutions, with debt claims (deposits) representing more than 90% of capital claims (Kose et al., 2016). Understanding the mechanisms that drive equity governance through shareholder power is therefore important for banks because the alignment of managers and shareholders' interests may strengthen the so-called "equity governance" in banks and worsen the prominent divergence of interests between shareholders and debtholders (depositors) in banks (Kose et al, 2016).

While shareholders have incentives to monitor and prevent managers from wrongdoing, they could also encourage banks to extend more credit supply and undertake more risk to obtain higher charter values.[3] Consequently, banks could engage in reaching-for-yield behavior, which could lead to further credit extensions for riskier borrowers, which, in turn, carries higher loan yield spreads (e.g., Acharya et al., 2018). However, providing lending to these borrowers would require banks to engage in costly monitoring. Exerting an adequate monitoring effort is crucial to prevent the adoption of excessive risk-seeking corporate policies that may result in increased systemic risk contributions by financial institutions (Chava and Purnanandam, 2010).

[3] Shareholders appear to react positively to the expansion of banks' credit supply as they perceive this as a positive signal (James, 1987).

Conversely, reducing the threat of litigation risk may curb equity governance, thereby restricting bank risk choices (Kose et al., 2016). In turn, this could decrease the costs of conflict between equity holders and debtholders as managers are freer to operate and balance divergent interests to maximize banks' enterprise value. Furthermore, creditors could be in the position to better protect themselves from equity holders' opportunistic behavior by requesting provisions to loan contracts and recurring covenant monitoring (Dichev and Skinner 2002; Chava and Roberts 2008). Indeed, covenants allow banks to exercise control over lending (Rajan and Wilton, 1995). On the other hand, if banks do not exert sufficient monitoring efforts, borrowers might have the incentive to select suboptimal projects with higher risk taking and loan defaults. This would result in an increase in credit risk and ultimately bank risk. It follows that while the decline in litigation threat may exacerbate managerial agency problems and constraints and reduce shareholder power in disciplining managers, it can also lessen managers' concerns about derivative lawsuits. In turns, this could encourage managers to be more precautious about lending activities.

In line with these arguments, we hypothesize that a reduction in shareholder litigation risk can improve firms' risk profiles. Different from previous studies focused on shareholder litigation risks for non-financial firms (e.g., Obaydin et al., 2021), our research question explores the different mechanisms given banks' unique features. Specifically, we conjecture that monitoring effort and credit risk management more in general are the channels through which litigation risk affects banks' risk.

There are several reasons why we focus on risks in the context of banks. First, banks are likely to take excessive risks that may increase deposit insurance costs, while no additional costs might be added to bank shareholders (e.g., Merton, 1977). Second, the regulatory and governance frameworks of banks are crucial to banks' risk and stability which can be crucial for the stability

of the real economy (Kroszner et al., 2007; Dell'Ariccia et al., 2008). Excessive risk taking by banks can lead to instability within the banking system as banks play a pivotal role in the economy by offering credit supply to firms and management payment systems. Previous studies suggest that the weaknesses of corporate governance mechanisms can expose banks to excessive risks, as proven by the 2007-2008 global financial crisis (Basel Committee on Banking Supervision, 2010). Indeed, strong corporate governance can decrease a manager's propensity towards risk and enhance monitoring and the alignment of interests of managers and shareholders (John et al., 2008) while supporting a sound financial system (e.g., Cheng, 2008; Adams and Ferreira, 2009; Adamas and Mehran, 2012). Although prior studies — such as Pathan (2009), Laeven and Levine (2009) and Srivastav and Hagendorff (2016) — have investigated the relationship between bank corporate governance and risk-taking, no studies to date have explored how the changes in shareholder litigation threat may affect banks' risk management. This is important since managerial incentives governed by strong equity governance may also stimulate excessive bank risk-taking (Kose et al., 2016).

Departing from the extant literature on litigation risks and UD laws, we focus on banks' tail risk exposure, which is commonly used in bank financial risk management because it leads to considerable losses and financial distress. As pointed out by Srivastav et al. (2017), tail risk offers an important signal of the quality of the choices made by management, which is mainly imputable to a lack of ability or effort. This will help us determine whether the implementation of UD laws and the consequent reduction of shareholder rights might affect a firm's risk management.

Tail risks may reward shareholders with positive returns in many scenarios but can also lead to large losses that can threaten banks' longer-term survival. Notably, although shareholders are not opposed to directors taking risks in principle (Acharya and Ryan, 2016), they are opposed to

any risk associated with value destruction and risks that can damage banks' viability and soundness (Stulz, 2015). In the case of an increase in tail risk, banks could indeed be more vulnerable to events that can lead to extremely large losses. This occurrence is more likely to expose banks to additional costs, such as an increase in the risk premium charged on bank debts and a lower borrowing volume (Flannery, 2001; Schaeck et al., 2011). Furthermore, banks could be under scrutiny from regulators, which provides a negative signal to the market concerning their financial health (Srivastav et al., 2017), thereby resulting in reduced stock prices and the further worsening of borrowing conditions (Berger and Davies, 1998; Slovin et al., 1999; DeYoung et al., 2001).

4. Data and methodology

4.1 Sample selection

To construct our sample, we first extract data on publicly traded US BHCs that filed FR Y-9C reports with the Federal Reserve during the 1986 -2008 period. Consolidated financial information on BHCs is retrieved from the Bank Regulatory database, and stock information is downloaded from the Centre for Research in Security Prices (CRSP).[4] We further merge these data with additional data on firm characteristics, such as information on incorporated states and states of location. Consistent with existing studies (e.g., Bourveau et al., 2017; Masulis et al., 2020; Obaydin et al., 2021), we determine a BHC's state of incorporation[5] from Edgar electronic filings

[4] We use the linking table (i.e., "CRSP-FRB LINK") provided by the Federal Reserve Bank of New York. The PERMCO-RSSD links is accessed from:https://www.newyorkfed.org/research/banking_research/datasets.html. The start and end dates for each BHC presented in the linking table are manually verified. Our sample is unbalanced and includes all BHCs in operation each year.

[5] Derivative lawsuits allow shareholders to sue on behalf of the corporation (i.e., parent corporation), from which any financial reimbursement is distributed to the corporation (e.g., Romano, 1991; Ferris et al., 2007; Erickson, 2010). Derivate lawsuits against any subsidiary bank would be raised against the corresponding BHC, and hence, the BHC's state-of-incorporation (see e.g., OCC Interpretative Letters 879 (November 10, 1999); OCC Interpretative Letters 891 (April 26, 2000)). For example, in Stone v. Ritter, 911 A.2d 362 (Del. 2006), the complaint alleged that the misbehavior of the branch bank employees was due to the directors of the BHC failing to monitor whether the

and Bill McDonald's website.[6] We retrieve data on BHCs' corporate governance from BoardEx. Our final sample consists of 8,173 bank-year observations for 976 BHCs from 1986 to 2008.[7] Among these companies, 224 BHCs experienced the adoption of UD laws.

4.2 Methodology

We develop three measures of bank risk. First, we consider tail risk. For banks, tail risk is crucial, as it is conventionally seen as a signal of excessive risk exposure because banks are exposed to extreme events that can undermine their survival (Hellmann et al., 2000; Cordella and Yeyati, 2003; Ellul and Yerramilli, 2013; Srivastav et al., 2017). For this reason, regulators are particularly concerned with bank tail risks. The increase in tail risks may in fact expose banks to additional costs, such as an increase in the risk premiums charged on bank debts by creditors as well as a drop in the amount of funds available for banks (Flannery, 2001; Schaeck et al., 2011; Stulz, 2015). This will further weaken banks' soundness. Specifically, following Ellul and Yerramilli (2013), tail risk (*Tail Risk*) is defined as the negative of the average stock return on a BHC for the 5% worst returns days for the BHC's stock over the given year.

Second, we account for bank total risk (*Total Risk*) as the annualized standard deviation of daily stock returns for each year. Third, we construct bank idiosyncratic risk (*IVol Risk*) as the annualized standard deviation of the residuals from the following model:

$$R_{i,t} = \alpha_i + \beta_{1,i} R_{mkt,t} + \beta_{2,i} Interest_t + \varepsilon_{i,t} \quad (1)$$

employees of a branch bank complied with the "Suspicious Activity Reports" required to be filed under various federal banking regulations.

[6] These data are available at https://sraf.nd.edu/data/.

[7] The total number of BHCs per year over the sample period is provided in Table B1.

where $R_{i,t}$ is the daily stock returns of BHC i, $R_{mkt,t}$ is the excess market returns of the value-weighted CRSP market index and $Interest_t$ denotes changes in the three-month Treasury bill rates.

To test the effects of UD laws on bank risk taking, we follow Bertrand and Mullainathan (2003) and employ a difference-in-differences framework with multiple treatment groups and time periods following the staggered adoption of UD laws in the United States. The baseline regression model is written as follows:

$$Bank\ Risk_{i,s,t} = \alpha_i + \alpha_t + \beta \times UD\ Law_{s,t} + \gamma \times BC_{i,s,t-1} + \theta \times SC_{s,t-1} + \varepsilon_{i,s,t} \quad (2)$$

where *i* denotes the BHC, *s* denotes the state of incorporation, and *t* denotes the year. $Bank\ Risk$ refers to the three measures of bank risk taking, including tail risk (*Tail Risk*) as the main variable as well as idiosyncratic risk (*IVol Risk*) and total risk (*Total Risk*) as alternative risk measures. The main variable of interest is *UD Law*, which is an indicator variable equal to one if state *s* adopted the UD law in year *t* and zero otherwise. BC includes several bank-level control variables and *SC* includes state-level control variables. We include bank-level fixed effects, denoted as α_i, to control for unobserved time-invariant BHC characteristics. We also include year fixed effects, denoted as α_t, to control for economic-wide shocks on bank risk-taking. Standard errors are clustered at the bank multiplied by year level.

As shown in Equation (2), the average treatment effect of director liability protection on bank risk is captured by the estimated coefficient on UD Law, β. State-level legal shocks are usually exogenous to firm-related factors (e.g., Bennett et al., 2018). By including bank and year fixed effects, β can be estimated as the within-state differences before and after the enactment of UD laws rather than based on the before-after differences for states in which there are no such legal changes over the same period (Imbens and Wooldridge, 2009; Gao and Zhang, 2017). Rather,

if we are interested in estimating the effect of the enactment of UD laws in North Carolina in 1995 on bank risk, we can subtract bank risk before 1995 from bank risk after 1995 for BHCs incorporated in North Carolina (i.e., the treatment group). However, identifying the effect of UD laws on bank risk could be difficult since economy-wide shocks may simultaneously appear and influence bank risk-taking in 1995. To account for these confounding effects, we can observe the same difference in bank risk-taking for BHCs incorporated in a control state where there is no such change in UD laws during the same period (i.e., the control group). Next, we calculate the difference between the difference in bank risk in North Carolina before and after 1995 and the difference in bank risk in the control state before and after 1995. Therefore, the difference between the two differences represents the effect of UD laws on bank risk in North Carolina. Our regression analysis extends this example by examining a variety of treatment and control groups, since different states adopted UD laws at different times.

We also control for several bank-level characteristics that may influence bank risk-taking behavior. First, bank size (*Bank Size*) is measured as the natural logarithm of gross total assets (GTA), which is equal to total assets plus the allowance for loan and lease losses and the allocated transfer risk reserve (Acharya et al., 2018). Bank profitability is measured by the return on assets (*ROA*), which is the ratio of earnings before taxes and extraordinary items to GTA. Income from non-traditional banking services is measured as the ratio of noninterest income to assets (*noninterest income/GTA*). Bank balance sheet composition is measured as the ratio of total loans to assets *(Loans/GTA*) and the ratio of deposits to total assets (*Deposit/GTA*). Bank franchise value is measured as the market value of equity divided by the gross total assets (*Equity/GTA*). In addition, we control for bank competition by using the Bank HHI (*Bank HHI*), which is the Herfindahl-Hirschman Index of the concentration of total assets at the state level. We also consider

the effect of macroeconomic conditions on bank risk-taking by including state real GDP growth (*GDP Growth*) in the baseline regression model. To mitigate the effects of outliers, all bank variables are winsorized at the 1st and 99th percentile values.

Table 2 presents the summary statistics. For the main measures of bank risk-taking, we find that the mean (median) values of *Tail Risk*, *IVol Risk*, and *Total Risk* are 0.053 (0.044), 0.374 (0.315) and 0.403 (0.338), respectively.[8] These values are within the range of those reported by Ellul and Yerramilli (2013) and Leung et al. (2019). Regarding the characteristics of BHCs included in our sample, an average BHC has a *Bank Size* of 14.287, an *ROA* of 0.008, a *Noninterest income/GTA* of 0.012, a *Loans/GTA* of 0.672, a *Deposit/GTA* of 0.776 and an *Equity/GTA* of 0.085. The mean (median) values of *Bank HHI* and *GDP Growth* are 0.244 (0.189) and 0.056 (0.054), respectively.

[Please insert Table 2 here]

5. Empirical results

5.1 UD laws and bank risk taking

In this section, we examine whether and, if so, to what extent UD law implementation has affected BHC risk. Table 3 presents the estimation of Equation (2). We find that the coefficient estimates of *UD Law* are negatively and statistically significant for *Tail Risk,* suggesting that the adoption of UD laws leads to a significant decrease in the level of bank risk taking. This finding supports the *risk management hypothesis* stating that BHCs incorporated in states adopting a UD law exhibit a subsequent reduction in tail risk. We find similar results when applying *IVol Risk* and *Total Risk*

[8] According to Ellul and Yerramilli (2013), a mean (median) of 0.053 (0.044) for *Tail Risk* suggests that the mean (median) return on the average BHC stock for the 5% worst return days for the BHC's stock over a year is -5.3% (-4.4%).

as dependent variables.[9] In terms of economic magnitude, the enactment of UD laws decreases bank tail risk, idiosyncratic risk and total risk by approximately 5.66%, 6.42% and 6.20%, respectively, relative to their sample means. These findings are comparable with previous studies such as Ellul and Yerramilli (2013) and Leung et al. (2019). For control variables, we show that in general, *Tail Risk*, *IVol Risk* and *Total Risk* are positively related to *Noninterest income* and are negatively related to *ROA*, *Loans*, *Bank HHI* and *GDP Growth*. These results are generally comparable with previous studies, such as Boyd and De Nicolo (2005), Ellul and Yerramilli (2013), Adhikari and Agrawal (2016), Williams (2016) and Leung et al. (2019). In sum, these findings are consistent with our hypothesis that the passage of UD laws reduces bank risk-taking.[10]

[Please insert Table 3 here]

5.2 Endogeneity tests

One potential concern is that our results for the relationship between the adoption of UD laws and bank risk might be driven by reverse causality. For example, the negative association between UD laws and bank risk may be due to lawmakers' responses to excessive bank risk-taking and thus the enactment of laws to protect director liability. We perform several tests to address this concern.

First, we follow Bertrand and Mullainathan (2003) and perform a dynamic treatment analysis to examine the timing of bank risk relative to the timing of the passage of UD laws. We decompose $UD\ Law$ into four dummy variables for the year before the enactment of UD laws ($UD\ Law^{-1}$), the year of UD law adoption ($UD\ Law^{0}$), the first year after the enactment of UD

[9] In unreported results, we repeat our baseline test using industry-adjusted risk measures, which are calculated as the deviation from the average industry-year values of *Tail Risk*, *IVol Risk* and *Total Risk*, respectively. Our results remain robust in the presence of these industry-adjusted risk measures. We thank an anonymous referee for pointing this out.

[10] In unreported results, we also investigate the association between the passage of UD laws and bank failures by using the data on bank failures over the 2000-2008 period from the FDIC. We find that the passage of UD laws leads to a lower rate of bank failure. We thank an anonymous referee for pointing this out.

laws ($UD\ Law^{+1}$), and two or more years after the enactment of UD laws ($UD\ Law^{+2}$). If our results are affected by endogeneity issues relating to reverse causality, the relationship between UD laws and bank risk taking might already exist before the enactment of UD laws (i.e., due to pre-existing trends), indicating that we should find a significant coefficient estimate of $UD\ Law^{-1}$. We report the results of our dynamic treatment analysis in Table 4.[11] We find that the coefficient estimates of $UD\ Law^{-1}$ are statistically insignificant across three measures of bank risk-taking, suggesting no significant differences in pre-trends between the treated and control banks; therefore, the parallel trends assumption is likely to hold (Roberts and Whited, 2013). Moreover, compared to the insignificant coefficient estimate of $UD\ Law^{-1}$, we show that the decrease in bank risk taking emerges after the enactment of UD laws. These results lend further support to the notion that the effect of UD laws on bank risk taking is not driven by reverse causality.

[Please insert Table 4 here]

Second, to ensure that our baseline results are not driven by chance, we perform a placebo test by randomizing the assignment of treated states (with no replacement) and enactment years chosen randomly from the sample period. We estimate the effect of pseudo-events on pseudo-treated states for the full set of control variables, as presented in Equation (2). We store the coefficient and standard error estimates for the placebo UD law and repeat this procedure 5,000 times to generate the distribution of the placebo estimates. In Figure 1, we show that the mean placebo coefficient estimates for *Total Risk*, *IVol Risk* and *Tail Risk* are close to zero. Moreover, the actual coefficient estimates of *UD Law* on *Tail Risk*, *Total Risk* and *IVol Risk* in Table 3 are -0.003, -0.025 and -0.024, respectively, which lie to the left of the entire distribution of coefficient

[11] We also omitted the year preceding the treatment as a benchmark to evaluate the parallel trend assumption along with the duration of the effect. Results are similar to those reported in Table 4.

estimates obtained from the placebo test. These results indicate that our findings are not likely driven by chance or omitted bank-level characteristics instead of the adoption of UD laws.

[Please insert Figure 1 here]

Our main results may also be driven by unobservable changes in local economic conditions. That is, some unobservable economic conditions may make the introduction of UD laws easier, while such economic conditions also tend to affect bank risk taking. To mitigate this concern, we examine the effect of UD laws on bank risk taking between the treated and controlled BHCs in bordering states. Because local economic conditions usually cross state borders, when unobserved changes in local economic conditions simultaneously affect the introduction of UD laws and bank risk taking, the treated and control BHCs located across a border may spuriously respond to the enactment of UD laws. In this scenario, the difference in bank risk-taking between treated and control BHCs located across a state border would be statistically insignificant. To test this possibility, we match each BHC in the treatment group to a BHC in the control group located in a bordering state that is similar in size. We require the distance between the treated and control BHCs to be within 100 miles so that both BHCs from the two groups are subject to similar local economic conditions (e.g., Gao et al., 2021). We maintain the years before and after the adoption of UD laws for our analysis. We re-estimate the baseline regression using the matched sample and report our results in Table 5. We find that the coefficient for *UD Law* remains statistically significant across the three measures of bank risk-taking, suggesting that our main results are not likely driven by unobservable confounding local economic conditions.

[Please insert Table 5 here]

Finally, we investigate whether our baseline results might be driven by other confounding legal changes. Specifically, our identification of legal changes might be affected by other state-

level antitakeover laws (e.g., Karpoff and Wittry, 2018) and the 2002 Sarbanes-Oxley (SOX) Act (19 out of 23 US States adopted the UD law before the passage of the SOX Act). To address this possibility, we repeat the regression estimation shown in Equation (2) by further controlling for additional five state-level antitakeover laws and the 2002 SOX Act. The estimated results are reported in Table 6. For *Tail Risk*, in columns (1)-(6) of Panel A of Table 6, we add indicator variables for Constituency Statute laws (*CS Law*), Business Combination laws (*BC Law*), Fair Price laws (*FP Law*), Director Duty laws (*DD Law*), Poison Pill laws (*PP Law*) and the 2002 SOX Act (*SOX*) to Equation (2). We further control for all these variables in column (7). In Panels B and C, we perform similar analyses for *IVol Risk* and *Total Risk*, respectively. We find that the coefficient estimates of *UD Law* remain negative and significant across all these specifications.

[Please insert Table 6 here]

6. Lending portfolio

Thus far, our results indicate a negative and significant relationship between the adoption of UD laws and bank risk taking. Given that banks can usually adjust risk-taking by modifying their lending decisions (i.e., lending channel) (e.g., Disyatat, 2011; Leung et al., 2019), we explore whether UD laws may influence bank risk through the improvement of lending portfolios. Specifically, we maintain that a reduction in the threat of derivative lawsuits and consequently increased director liability protection can have a positive impact on directors' abilities or efforts made in risk management during the lending process. Thus, we posit that banks may reduce risk by improving the quality of their lending portfolios. Furthermore, we attempt to gauge whether BHCs may have improved loan quality by changing the pricing and non-pricing features of loan contracts (Section 6.2) and credit supply to risky borrowers (Section 6.3).

6.1 Loan quality

Following previous studies such as Jayaratne and Strahan (1996), Ioannidou and Penas (2010), Bushman and Williams (2012), Ellul and Yerramilli (2013), Bouwman and Malmendier (2015) and Abedifar et al. (2018), we construct four variables as measures of the quality of lending portfolios. The first variable is the ratio of nonperforming loans to gross total assets (*NPL/GTA*), which is defined as the ratio of the sum of loans past due 30 days or more and nonaccrual loans to gross total assets. Our second measure of loan quality is the ratio of charge-offs to gross total assets (*Charge offs/GTA*), where charge-offs are the sum value of loans and leases removed from the books and charged against loss reserves minus recoveries on delinquent debt. The third measure is the ratio of loan loss reserve to total assets (*LLR/GTA*), which is the ratio of the sum of loan loss reserve to gross total assets. Finally, we measure loan quality by using the ratio of the amount of loan loss provision to gross total assets (*LLP/GTA*). Lower values of these ratios imply that the loan quality of a bank is likely to be better. We repeat our regression analysis as shown in Equation (2) by using loan quality measures as the main dependent variables. The results are reported in Table 7. We find that the coefficient estimates of *UD Law* are negative and statistically significant across all four measures of loan quality. This result suggests that the quality of bank lending portfolios improves following the enactment of UD laws.

[Please insert Table 7 here]

6.2 Syndicate loans

Prior theoretical and empirical studies have documented that creditors may use debt covenants to monitor and restrain the opportunistic managerial behaviors of their borrowing firms (e.g., Myers, 1977; Smith and Warner, 1979). Rajan and Winston (1995) indicate that lenders use loan covenants

to enhance the *ex-post* monitoring of changes in loan quality. Also, recent debt covenant literature has suggested that banks with more market risk are likely to use fewer/looser covenants in their loan contracts (e.g., Berger et al., 2017; Ho et al., 2019; Nguyen et al., 2019). Therefore, we investigate whether banks decrease their risk-taking by using more debt covenants to monitor borrowing firms following the enactment of UD laws. Data on syndicate loans comes from LPC-Dealscan, which contains the most comprehensive and historical loan-deal information available on US syndicate loans.[12]

Following Deng et al. (2020), we develop several measures of debt covenants, including indicator variables for performance covenants (*Performance Covenants*), capital covenants (*Capital Covenants*), financial covenants (*Financial Covenants*) and general covenants (*General Covenants*). We also follow Bradley and Roberts (2015) and construct a measure of covenant intensity (*Covenant Intensity*), which is an index value ranging from 0 to 6. The results listed in Table 8 show the relationship between the enactment of UD laws and the debt covenants included in loan contracts. Like Deng et al. (2020), Bradley and Roberts (2015) and Bozanic et al. (2018), we control for the firm-level characteristics of borrowing firms, such as the return on assets (*B_ROA*), leverage (*B_Leverage*), Tobin's Q (*B_Tobin's Q*), size (*B_Size*) and capital expenditure (*B_CAPX*). We also control for loan- and bank-level characteristics, including the number of facilities (*Facility Amount*), maturity of loans (*Maturity*), size of banks (*Bank Size*) and profitability of banks (*Bank ROA*). We find that the coefficient estimates of *UD Law* are positive and significant in columns (1)-(3), except for the number of general covenants, as shown in column (4). For the measures of covenant intensity, the coefficient estimate of UD Law continues to be positive and statistically significant at the 1% level. These results indicate that banks increase the

[12] We identify the lead bank in each syndicate loan by employing the ten-part ranking hierarchy developed by Chakraborty et al. (2018).

covenant-based monitoring of their borrowing firms following the adoption of UD laws with more performance and capital covenants, more financial covenants and higher covenant intensity.

[Please insert Table 8 here]

We next investigate whether the enactment of UD laws may influence corporate loan pricing, especially when the information environment of borrowing firms is less transparent. Recent studies, such as Sufi (2007) and Ertugrul et al. (2017), have indicated that borrowers with more information asymmetry are associated with stricter loan terms from lenders. Therefore, we posit that banks might apply more scrutiny with respect to loan pricing when their borrowing firms' information asymmetry increases following the adoption of UD laws. Similar to Chava et al. (2009), He and Hu (2016) and Croci et al. (2021), we construct two pricing variables, the all-in spread down (AISD) and total borrowing cost (TBC). A higher AISD or TBC is associated with a higher loan price.

Ahn and Choi (2009) find that borrowing firms' earnings management behavior decreases when the strength of bank monitoring increases. We therefore construct a subsample analysis for firms with high (above-median) and low (below-median) levels of earnings management for the borrowers included in our sample.[13] From the sample, we also removed borrowers located in the same state as the lead bank of each syndicate loan in the treatment years. This allows us to control for the fact that both borrowers and lead banks are exposed to changes to the same states' litigation

[13] We measure a borrower's earnings management based on the modified Jones model (e.g., Jones, 1991; Dechow et al., 1995), which calculates discretionary accruals. The specific model is as follows:

$$\frac{TA_{it}}{Asset_{it-1}} = \beta_0 \frac{1}{Asset_{it-1}} + \beta_1 \frac{(\Delta Rev_{it} - \Delta AR_{it})}{Asset_{it-1}} + \beta_2 \frac{PPE_{it}}{Asset_{it-1}} + \varepsilon_{it},$$

where TA_{it} denotes total accruals for firm *i* in year *t* computed as (change in current assets - change in current liabilities - change in cash + change in debt in current liabilities – depreciation and amortization expense); $Asset_{it-1}$ denotes the total assets of firm *i* in year *t-1*; ΔRev_{it} is the change in revenue; ΔAR_{it} is the change in accounts receivable; PPE_{it} denotes gross property, plants and equipment. The definitions for these variables are provided in Kothari et al. (2005). Earnings management is then measured as the signed value of the residual form from the equation as shown above.

risk during the same period. However, the results are similar if we consider the entire sample of observations.

As shown in columns (1) and (2) of Panels A and B of Table 9, borrowers with a higher level of earnings management are associated with higher loan pricing following the enactment of UD laws. For columns (3) and (4) of Panels A and B of Table 9, we measure the corporate information environment by using stock price synchronicity through R^2 (e.g., Morck et al., 2000; Jin and Myers, 2006; Gul et al., 2011). A higher value of R^2 indicates that a firm is more transparent. The results show some evidence that the enactment of UD laws has a positive impact on loan pricing, as measured by the AISD, for opaque firms (i.e., a lower R^2). For firms that are more transparent, we find that the coefficient estimates of *UD Law* are significant and negative for both measures of loan pricing, suggesting that following the enactment of UD laws, transparent firms experience a decrease in their loan pricing. In columns (5) and (6) of Panels A and B of Table 9, we present subsample analyses for firms with high and low illiquidity ratios, as developed by Amihud (2002). Firms with a higher illiquidity ratio are less transparent. We find that the coefficient estimates of *UD Law* are positive and significant for firms with a higher illiquidity ratio for both measures of loan pricing, while the relationship between the adoption of UD laws and the AISD is negative and significant for firms with a lower illiquidity ratio. This result suggests that less transparent firms are likely to experience higher loan pricing following the adoption of UD laws. All of these findings support the view that banks require more stringent covenant-based monitoring requirements and set stricter contractual conditions for riskier and opaque borrowers.

[Please insert Table 9 here]

As a further test, we explore the loan renegotiation dynamics of BHCs in states that adopted UD laws. As maintained by Roberts (2015), many renegotiations are motivated by unforeseen

contingencies and information problems between the borrower and lender. We therefore postulate that loan renegotiations are less likely to occur if lenders can properly evaluate the borrower's risk profile at loan origination and exert adequate monitoring and due diligence effort. For this analysis, we specifically focus on increased interest rates, which are usually associated with bad news about borrowers and reflect moral hazard potential (Gorton and Kahn, 2000).[14]

Table B2 shows that BHCs incorporated in states adopting UD laws also tend to engage less in contract renegotiation related to increased interest rates, suggesting that they can cope better with asymmetric information problems with borrowers. Instead, we do not find any significant results in terms of loan renegotiation frequency (which also includes maturity and credit extensions).

6.3 Credit composition

In this section, we investigate whether the enactment of UD laws may influence the supply of credit to risky borrowers. Specifically, we posit that the improvement in asset quality could be triggered by the removal of credit access to relatively risky borrowers. On this matter, previous studies have shown that certain forms of credit can expose BHCs to severe bankruptcy risk and/or the deterioration of asset quality. For example, the existing literature has highlighted that real estate credit and credit card loans are related to a higher probability of bank failure (e.g., Cole and White, 2012; Berger and Bouwman, 2013; Berger et al., 2016, Acharya et al., 2018) and high charge-off rates (e.g., Harris et al., 2015; Acharya et al., 2018), respectively. By investing in more opaque credit categories, BHCs may undertake excessive risk, in this way also harming the effectiveness

[14] Renegotiation data were obtained from http://finance.wharton.upenn.edu/~mrrobert/styled-9/styled-15/index.html.

of market discipline as a mechanism of risk control (Levine, 2004; Mehran et al., 2011; Jones et al., 2013).

Following Jones et al. (2012) and Acharya et al. (2018), we construct several measures of forms of credit based on five asset categories: commercial and industrial loans (*CI Loans*), real estate loans (*RE Loans*), credit card lending (*CC Lending*), other loans (*Other Loans*), and mortgage-backed securities (*MBS*). A higher weight of these assets in bank asset composition may indicate a higher level of bank risk. We re-run our regression analysis as shown in Equation (2) by using these measures of bank opaqueness as the main dependent variables. The estimation results are presented in Table 10. We find some evidence that the enactment of UD laws may increase bank transparency, as the coefficient estimates of *UD Law* are negative and statistically significant at the 5% level or better for real estate loans and credit card lending, while they are positive but statistically insignificant for the other credit categories. Overall, these findings suggest that BHCs have reduced the loan supply to relatively risky borrowers.

[Please insert Table 10 here]

7. Board composition

In this section, we run an additional analysis to explore whether the improvement of banks' credit risk management may be also due to changes in the quality of board directors. As documented in the extant literature, a bank's board of directors plays an important role in influencing risk-taking activities (e.g., Levine, 2004). More specifically, recent studies have shown that bank board independence and audit committees significantly reduce the level of excessive risk-taking by banks (e.g., Sun and Liu, 2014; Vallascas et al., 2017). While previous studies have found that board independence in non-financial firms is associated with transparent financial reporting (e.g., Klein,

2002; Anderson et al., 2004), Erkens et al. (2012) demonstrate that bank board independence may encourage managers to enhance capital adequacy and reduce bankruptcy. For non-financial firms, Masulis et al. (2020) find that the passage of UD laws affects the recruitment and retention of board directors. We also account for directors' "financial expertise," although it is still debated whether this can be effective in reducing banks' risk taking. A stream of studies has argued that board members with prior banking experience and financial expertise can better assess the impact of bank policy risk (Walker, 2009). Harris and Raviv (2008) maintain that financial expertise is paramount for a better understanding of firms' complexity and for effectively managing the risks related to firm policies. Conversely, Minton et al. (2014) find that financial experience may encourage directors to undertake more risk-taking activities because of their familiarity with and comprehension of banks' financial instruments, especially during a financial crisis. Drawing on these findings, we examine whether the passage of UD laws may lead to changes in bank board composition. In terms of the scope of our analysis, we obtain data on governance from BoardEx and develop five measures of bank board composition, namely, *Board Size*, *Board Independence*, *Independent Audit Committee*, *Audit Committee Size* and *Independent Board Financial Expertise*.[15]

We rerun our regression analysis as shown in Equation (2) by using these five measures as dependent variables. While column (1) of Table 11 shows that board size decreases significantly following the passage of UD laws, column (2) indicates that the percentage of independent directors has instead increased. In columns (3)-(5), we also find that *UD Law* is positively and significantly related to *Independent Audit Committee*, *Audit Committee Size* and *Independent*

[15] The number of observations in Table 11 is 2,336 (based on 376 banks) over the period of 1999-2008, which corresponds to 28.5% of the total observations (i.e., 8,173). The reduction in observations is explained by the fact that BoardEx has limited data before 2004.

Board Financial Expertise. These results provide some evidence that BHCs have greater outside representation, larger numbers of independent directors in their audit committees and an increase in the number of independent directors with "financial expertise" after the adoption of UD laws. These findings may indicate that BHCs present stronger corporate governance after UD law implementation.

[Please insert Table 11 here]

8. Conclusion

In exploiting the exogenous variation in the threat of shareholder litigation induced by UD laws, this paper examines the association between litigation risk and bank risk-taking. Based on a sample of 976 BHCs over the period of 1993–2008, our results are strongly consistent with the risk management hypothesis, as BHCs incorporated in states that have passed UD laws have responded to the decreased litigation risk by reducing their levels of excessive risk-taking. We offer two explanations for this finding. First, we provide evidence that since the enactment of UD laws, BHCs have improved the quality of their lending portfolios. We maintain that BHCs may have attained such an effect by applying stricter pricing and non-pricing features in loan contracts for risky borrowers since the passage of UD laws. Specifically, we show that BHCs operating in states that adopted UD laws use more loan covenants and apply higher loan prices to borrowing firms that are more likely to manipulate earnings information and are less transparent. Furthermore, we provide evidence that BHCs have reduced their supply of credit for relatively risky borrowers. In this regard, our findings indicate that BHCs have reduced their provision of real estate loans, credit card loans and mortgage-backed securities since UD law implementation. Finally, we offer evidence that since UD law passage, BHCs have strengthened the organizational structures of their

risk management functions and changed their board compositions through greater outside representation, larger numbers of independent directors on audit committees and higher numbers of independent directors with "financial expertise."

Overall, our paper extends the extant literature on the impact of shareholder litigation on corporate decision-making in non-financial firms by documenting whether and how changes to litigation risk may influence banks' risk-taking. Future avenues of research could attempt to shed more light on changes to managers' incentives due to shareholder litigation risk.

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Figure 1. Placebo tests

This figure plots the distribution of the coefficients of $UD\ Law$ estimates from the placebo tests by randomizing the assignment of treated states (with no replacement) and enactment years chosen randomly from the sample period between 1986 and 2008. We estimate the effect of pseudo-events on pseudo treated states with the full set of control variables as presented in the baseline model. We store the coefficient and standard error estimates for the placebo UD law and repeat this procedure for 5,000 times to generate the distribution of the placebo estimates.

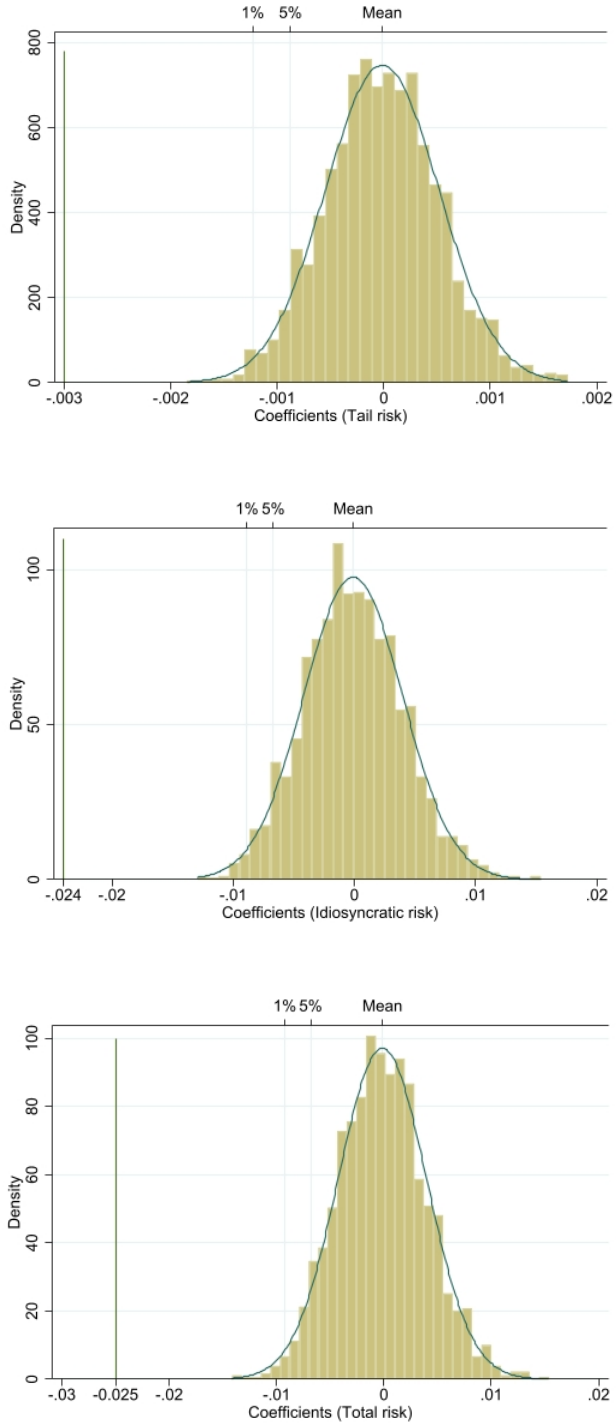

Table 1: Staggered adoptions of a Universal Demand statute

This table presents the adoption year of a UD law across states in the US between 1989 and 2005. The list is the same as used in Houston et al. (2018), Appel (2019), and Masulis et al. (2020).

States Adopting UD Law	State Abbreviation	Effective Year
Georgia	GA	1989
Michigan	MI	1989
Florida	FL	1990
Wisconsin	WI	1991
Montana	MT	1992
Utah	UT	1992
Virginia	VA	1992
Mississippi	MS	1993
New Hampshire	NH	1993
North Carolina	NC	1995
Arizona	AZ	1996
Nebraska	NE	1996
Connecticut	CT	1997
Maine	ME	1997
Pennsylvania	PA	1997
Texas	TX	1997
Wyoming	WY	1997
Idaho	ID	1998
Hawaii	HI	2001
Iowa	IA	2003
Massachusetts	MA	2004
Rhode Island	RI	2005
South Dakota	SD	2005

Table 2. Summary statistics

This table reports the descriptive statistics on measures of bank risk-taking, UD laws, and firm characteristics for the sample used in baseline regression over the period 1986-2008. We develop three measures of bank risk. First, following Ellul and Yerramilli (2013), tail risk (*Tail Risk*) is defined as the negative of the average stock return on a BHC during the 5% worst returns days for the BHC's stock over the year. Second, we construct bank idiosyncratic risk (*IVol Risk*) as the annualized standard deviation of the residuals from the following model: $R_{i,t} = \alpha_i + \beta_{1i}R_{mkt,t} + \beta_{2i}Interest_t + \varepsilon_{it}$; where $R_{i,t}$ is daily stock returns of BHC *i*, $R_{mkt,t}$ is the excess market returns of the value-weighted CRSP market index, and $Interest_t$ is the changes in the three-month Treasury bill rates. Finally, we consider bank total risk (*Total Risk*) as the annualized standard deviation of daily stock returns for each year. *UD Law* is a dummy variable equal to one if a BHC is incorporated in a state that has adopted the UD law, and zero otherwise. *Bank Size* is measured as measured as the natural logarithm of the book value of deflated total assets; bank profitability is measured by return on assets (*ROA*), which is the ratio of earnings before taxes and extraordinary items to total assets; *Non-interest Income/GTA* is the income from non-traditional banking services, which is measured as the ratio of non-interest income to gross total gross assets; *Loans/GTA* is the ratio between total loans and gross total assets; *Deposits/GTA* is the ratio between total deposits and gross total assets; *Equity/GTA* measures the bank franchise value, which is a ratio of market value of equity divided by gross total assets; *Bank HHI* measures the bank competition, which is the concentration of total assets at the state level; *GDP Growth* is the real GDP growth rate at the state level. Detailed definitions of these variables are provided in Appendix A. All bank variables are winsorized at the 1st and 99th percentile values.

Variables	Mean	Median	Std. Dev.	Obs.
Tail Risk	0.053	0.044	0.031	8,173
IVol Risk	0.374	0.315	0.228	8,173
Total Risk	0.403	0.338	0.239	8,173
UD Laws	0.175	0.000	0.380	8,173
Bank Size	14.287	13.946	1.571	8,173
ROA	0.008	0.010	0.841	8,173
Non-Interest Income/GTA	0.012	0.010	0.010	8,173
Loans/GTA	0.672	0.688	0.125	8,173
Deposits/GTA	0.776	0.795	0.098	8,173
Equity/GTA	0.085	0.083	0.024	8,173
Bank HHI	0.244	0.189	0.166	8,173
GDP Growth	0.056	0.054	0.033	8,173

Table 3. The impact of UD laws on bank risk-taking

In this table, we examine the association between the adoption of UD laws and bank risk-taking. Dependent variable is the bank risk-taking, which is measured by *Tail Risk, IVol Risk*, and *Total Risk* respectively. The main variable of interest is *UD Law*, which is an indicator variable equal to one if a BHC is incorporated in a state that has adopted the UD law, and zero otherwise. We control for bank-level characteristics, including *Bank Size*, *ROA*, *Non-interest Income/GTA*, *Loan/GTA*, *Deposits/GTA*, *Equity/GTA*, *Bank HHI*, and *GDP Growth*. Detailed definitions of these variables are provided in Appendix A. Standard errors are clustered at the bank and year level. All accounting variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Tail Risk	IVol Risk	Total Risk
	(1)	(2)	(3)
UD Law	-0.003**	-0.024**	-0.025**
	(0.00)	(0.01)	(0.01)
Bank Size	0.003**	0.007	0.018
	(0.00)	(0.01)	(0.01)
ROA	-1.647***	-13.530***	-13.812***
	(0.11)	(0.95)	(0.95)
Non-Interest Income/GTA	0.278***	2.479***	2.573***
	(0.08)	(0.76)	(0.76)
Loans/GTA	-0.017***	-0.118***	-0.123***
	(0.00)	(0.03)	(0.04)
Deposits/GTA	-0.004	-0.026	-0.028
	(0.01)	(0.05)	(0.05)
Equity/GTA	0.019	-0.339**	0.028
	(0.02)	(0.17)	(0.18)
Bank HHI	-0.016***	-0.128***	-0.131***
	(0.00)	(0.03)	(0.03)
GDP Growth	-0.043***	-0.341***	-0.335***
	(0.01)	(0.11)	(0.11)
Bank FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adjusted R^2	0.666	0.614	0.633
N	8,173	8,173	8,173

Table 4. The impact of UD laws on bank risk-taking: Dynamic treatment analysis

This table reports the dynamic treatment analysis of the baseline results. Dependent variable is the bank risk-taking, which is measured by *Tail Risk*, *IVol Risk*, and *Total Risk*, respectively. We replace the main variable of interest, UD Law, in Table 3 with a set of indicator variables: *UD Law*$^{-1}$ is a dummy variable equal to one for one year before the enactment of UD laws; *UD Law*^{0} is a dummy variable equal to one for the enactment of UD laws; *UD Law*$^{+1}$ is a dummy variable equal to one for one year after the enactment of UD laws; *UD Law*$^{2+}$is a dummy variable equal to one for two or more years after the enactment of UD laws. We control for bank-level characteristics, including *Bank Size*, *ROA*, *Non-interest Income/GTA*, *Loan/GTA*, *Deposits/GTA*, *Equity/GTA*, *Bank HHI*, and *GDP Growth*. Detailed definitions of all variables are provided in Appendix A. Standard errors are clustered at the bank and year level. All accounting variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Tail Risk	*IVol Risk*	*Total Risk*
	(1)	(2)	(3)
UD Law^{-1}	-0.002	-0.019	-0.018
	(0.00)	(0.02)	(0.02)
UD Law^{0}	-0.003*	-0.029**	-0.027**
	(0.00)	(0.01)	(0.01)
UD Law^{+1}	-0.003	-0.027*	-0.028*
	(0.00)	(0.01)	(0.01)
UD Law^{2+}	-0.004***	-0.036***	-0.037***
	(0.00)	(0.01)	(0.01)
Bank Controls	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adjusted R^2	0.666	0.614	0.633
N	8,173	8,173	8,173

Table 5. The impact of UD laws on bank risk-taking: Controlling for unobserved local economic conditions

This table presents the results of the relationship between the adoption of UD laws and bank risk-taking by controlling for unobserved local economic conditions. Specifically, we examine the effect of UD laws on bank risk taking between the treated BHCs and the control BHCs in bordering states. we match each BHC in the treatment group to a BHC in the control group, which is also located in a bordering state and closest in size. We require the distance between the treated BHCs and the control BHCs to be within 100 miles so that both BHCs of the two groups are subject to similar local economic conditions (e.g., Gao et al., 2020). We maintain the year before and after the adoption of UD laws for our analysis. Dependent variable is the bank risk-taking, which is measured by *Tail Risk, IVol Risk*, and *Total Risk*, respectively. The main variable of interest is *UD Law*, which is an indicator variable equal to one if a BHC is incorporated in a state that has adopted the UD law, and zero otherwise. We control for bank-level characteristics, including *Bank Size*, *ROA*, *Non-interest Income/GTA*, *Loan/GTA*, *Deposits/GTA*, *Equity/GTA*, *Bank HHI*, and *GDP Growth*. Detailed definitions of all variables are provided in Appendix A. Standard errors are clustered at the bank and year level. All accounting variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Tail Risk	IVol Risk	Total Risk
	(1)	(2)	(3)
UD Law	-0.002*	-0.020*	-0.022**
	(0.00)	(0.01)	(0.01)
Bank Controls	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adjusted R^2	0.636	0.596	0.609
N	4,533	4,533	4,533

Table 6. Impact of UD laws on bank risk-taking: Controlling for confounding legal changes

This table presents the results of the relationship between the adoption of UD laws and bank risk-taking by controlling for confounding legal changes. Dependent variable is the bank risk-taking, which is measured by Tail Risk (Panel A), IVol Risk (Panel B), and Total Risk (Panel C), respectively. The main variable of interest is UD Law, which is an indicator variable equal to one if a BHC is incorporated in a state that has adopted the UD law, and zero otherwise. We control for bank-level characteristics, including Bank Size, ROA, Non-interest Income/GTA, Loan/GTA, Deposits/GTA, Equity/GTA, Bank HHI, and GDP Growth. Detailed definitions of all variables are provided in Appendix A. For each panel, we add indicator variables of Constituency Statute Laws (CS Law), Business Combination laws (BC Law), Fair Price Laws (FP Law), Director Duty laws (DD Law), Poison Pill laws (PP Law) and the 2002 Sarbanes-Oxley Act (SOX), respectively. We control for all these variables in column (7). Standard errors are clustered at the bank and year level. All accounting variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Tail Risk

	Tail Risk						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
UD Law	-0.003**	-0.003**	-0.003**	-0.002*	-0.003**	-0.003**	-0.003**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
CS Law	0.001						0.002
	(0.00)						(0.00)
BC Law		0.002					0.001
		(0.00)					(0.00)
FP Law			0.002				0.002
			(0.00)				(0.00)
DD Law				-0.003**			-0.002*
				(0.00)			(0.00)
PP Law					-0.003***		-0.002*
					(0.00)		(0.00)
SOX						0.053***	0.053***
						(0.00)	(0.00)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.666	0.666	0.666	0.667	0.667	0.666	0.667
N	8,173	8,173	8,173	8,173	8,173	8,173	8,173

Panel B. IVol Risk

	IVol Risk						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
UD Law	-0.026**	-0.025***	-0.024**	-0.021**	-0.022**	-0.024**	-0.024**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
CS Law	0.011						0.018
	(0.01)						(0.01)
BC Law		0.017					0.014
		(0.01)					(0.01)
FP Law			0.010				0.010
			(0.01)				(0.02)
DD Law				-0.018*			-0.014
				(0.01)			(0.01)
PP Law					-0.020**		-0.016*
					(0.01)		(0.01)
SOX						0.326***	0.328***
						(0.03)	(0.03)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.614	0.614	0.614	0.614	0.614	0.614	0.614
N	8,173	8,173	8,173	8,173	8,173	8,173	8,173

Panel C. Total Risk

	Total Risk						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
UD Law	-0.027***	-0.027***	-0.025**	-0.021**	-0.023**	-0.025**	-0.025**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
CS Law	0.011						0.018
	(0.01)						(0.01)
BC Law		0.020*					0.017
		(0.01)					(0.01)
FP Law			0.012				0.013
			(0.01)				(0.02)
DD Law				-0.020**			-0.015
				(0.01)			(0.01)
PP Law					-0.022***		-0.017*
					(0.01)		(0.01)
SOX						0.434***	0.435***
						(0.03)	(0.03)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.633	0.633	0.633	0.633	0.633	0.633	0.633
N	8,173	8,173	8,173	8,173	8,173	8,173	8,173

Table 7. UD laws and the quality of bank lending portfolio

In this table, we examine the impact of UD laws on the quality of bank lending portfolio. We construct four variables as measures of the quality of lending portfolio, which are dependent variables as presented in columns (1)-(4), respectively. *NPL/GTA* is defined as the ratio of the sum of loans past due 30 days or more and nonaccrual loans to total assets, where *GTA* is total assets plus the allowance for loan and lease losses and the allocated transfer risk reserve. Our second measure of loan quality is charge-offs to total assets (*Charge offs/GTA*), where charge-offs are the sum value of loans and leases removed from the books and charged against loss reserves, and then minus recoveries on delinquent debt. *LLR/GTA* is the ratio of the sum of loan loss reserve to total assets plus the allowance for loan and lease losses and the allocated transfer risk reserve. Finally, *LLP/GTA* is the ratio of the amount of loan loss provision to total assets plus the allowance for loan and lease losses and the allocated transfer risk reserve. The main variable of interest is *UD Law*, which is an indicator variable equal to one if a BHC is incorporated in a state that has adopted the UD law, and zero otherwise. We control for bank-level characteristics, including *Bank Size*, *ROA*, *Non-interest Income/GTA*, *Loan/GTA*, *Deposits/GTA*, *Equity/GTA*, *Bank HHI*, and *GDP Growth*. Detailed definitions of all variables are provided in Appendix A. Standard errors are clustered at the bank and year level. All accounting variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	NPL/GTA	Charge offs/GTA	LLR/GTA	LLP/GTA
	(1)	(2)	(3)	(4)
UD Law	-0.049*	-0.047***	-0.065***	-0.037*
	(0.03)	(0.02)	(0.01)	(0.02)
Bank Controls	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.481	0.531	0.593	0.440
N	8,173	8,173	8,173	8,173

Table 8. UD laws and loan covenants

In this table, we examine the impact of UD laws on the loan covenants. The independent variables are measures of loan covenants, including indicator variables of the performance covenants, the capital covenants, the financial covenants, the general covenants, and the covenant intensity. Specifically, *Performance Covenants* is an indicator variable equal to one if a loan contains performance covenants, which include which includes maximum debt to EBITDA, minimum EBITDA, minimum fixed-charge coverage, minimum interest coverage, maximum senior debt to EBITDA, minimum cash-interest coverage, and minimum debt-service coverage; *Capital Covenants* is an indicator variable equal to one if a loan contains capital covenants, which include minimum quick ratio, minimum current ratio, maximum debt to equity, maximum debt to tangible net worth, maximum leverage, maximum senior leverage, minimum net worth, and minimum tangible net worth; *Financial Covenants* is an indicator variable equal to one if a loan contains financial covenants; *General Covenants* is an indicator variable equal to one if a loan contains general covenants, which include dividend restriction, asset sales sweep, assignment restrictions, collateral release, debt-issuance sweep, equity issuance sweep, excess-cash-flow sweep, insurance-proceeds sweep, percentage of excess cash flow, percentage of net income, required lenders, and term changes; *Covenant Intensity* is an index value ranging from 0 to 6, which is based on six different covenants as described in Bradley and Roberts (2015). The main variable of interest is *UD Law*, which is an indicator variable equal to one if a BHC is incorporated in a state that has adopted the UD law, and zero otherwise. We control for firm-level characteristics of borrowing firms. For a borrowing firm, *B_ROA* is the ratio of operating income divided by total assets; *B_Leverage* is the ratio of total debts divided by total assets; *B_Tobin's Q* is the ratio of the sum value of total assets less the book value of equity plus the market value of equity, divided by the total assets; *B_Size* is the logarithm value of total assets; *B_CAPX* is the capital expenditures divided by lagged total assets. We also control for loan-level and bank-level characteristics. *Facility Amount* is the total amount of facility; *Maturity* is the maturity of loan; *Bank Size* is the measured as measured as the natural logarithm of the book value of deflated gross total assets; *Bank ROA* is the ratio of earnings before taxes and extraordinary items to gross total assets. Detailed definitions of all variables are provided in Appendix A. Standard errors are clustered at the bank and year level. All accounting variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Performance Covenants	Capital Covenants	Financial Covenants	General Covenants	Covenant Intensity
	(1)	(2)	(3)	(4)	(5)
UD Law	0.104***	0.051**	0.054***	0.016	0.136***
	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)
B_ROA	0.133***	0.036	0.116***	0.054***	0.081*
	(0.03)	(0.02)	(0.03)	(0.02)	(0.05)
B_Leverage	0.032*	-0.069***	-0.003	0.011	0.178***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)
B_Tobin's Q	-0.026***	0.000	-0.016***	-0.018**	-0.056***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
B_Size	-0.094***	-0.055*	-0.084***	-0.026	-0.143***
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)
B_CAPX	0.010	0.042***	0.018	0.010	-0.057***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Facility Amount	0.015**	-0.002	0.016***	0.044***	0.014*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Maturity	0.055***	-0.007	0.037***	0.026***	0.074***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Bank Size	0.004	0.017	0.027	-0.035*	-0.063*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Bank ROA	0.467	1.205	0.536	1.450	0.268
	(1.07)	(1.31)	(0.87)	(1.52)	(1.90)
Bank FE	Yes	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes	Yes
Facility start year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.514	0.313	0.629	0.612	0.434
N	8,426	8,426	8,426	8,426	8,426

Table 9. UD laws and loan pricing

This table presents the association between the adoption of UD laws and loan pricing. Dependent variable is loan pricing, which is measured by the all-in spread down (AISD) and, alternatively, by the total borrowing cost (TBC), as shown in panels A and B, respectively. A higher value of *AISD* or *TBC* indicates a higher loan price. The main variable of interest is *UD Law*, which is an indicator variable equal to one if a BHC is incorporated in a state that has adopted the UD law, and zero otherwise. In columns (1) and (2) of panels A and B, we conduct subsample analysis for borrowing firms with above- and below-median earnings management (*High-* and *Low-EM*) of the sample. In columns (3) and (4), we conduct subsample analysis for borrowing firms that are with an above- and below-median value of R^2 (*High-* and *Low-*R^2) of the sample. In columns (5) and (6), we conduct subsample analysis for borrowing firms that have an above- and below-median value of illiquidity ratio (*High-* and *Low-Illiquidity*). We control for bank-level characteristics, including *Bank Size*, *ROA*, *Non-interest Income/GTA*, *Loan/GTA*, *Deposits/GTA*, *Equity/GTA*, *Bank HHI*, and *GDP Growth*. Detailed definitions of all variables are provided in Appendix A. Standard errors are clustered at the bank and year level. All accounting variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. AISD

	High-EM	Low-EM	Low-R^2	High-R^2	High-Illiquidity	Low-Illiquidity
	(1)	(2)	(3)	(4)	(5)	(6)
UD Law	0.407**	-0.273	0.365*	-0.527***	0.514***	-0.370***
	(0.18)	(0.18)	(0.19)	(0.15)	(0.17)	(0.10)
Facility & Bank controls	Yes	Yes	Yes	Yes	Yes	Yes
Borrower controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Facility start year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.478	0.516	0.422	0.449	0.298	0.348
N	1,522	1,392	1,890	2,106	1,548	2,444

Panel B. TCB

	High-EM	Low-EM	Low-R^2	High-R^2	High-Illiquidity	Low-Illiquidity
	(1)	(2)	(3)	(4)	(5)	(6)
UD Law	0.507***	-0.222	0.248	-0.411**	0.408**	-0.229
	(0.15)	(0.17)	(0.15)	(0.16)	(0.16)	(0.17)
Facility & Bank controls	Yes	Yes	Yes	Yes	Yes	Yes
Borrower controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Facility start year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.440	0.469	0.387	0.433	0.316	0.337
N	1,094	989	1,316	1,408	1,132	1,594

Table 10. UD laws and bank credit composition

This table presents the association between the adoption of UD laws and bank opaqueness. We construct five measures of bank opaqueness based on five asset categories: commercial and industrial loans (*CI Loans*), real estate loans (*RE Loans*), credit card lending (*CC Lending*), other loans (*Other Loans*), and mortgage-backed securities (*MBS*). A higher weight of these assets in bank asset composition may indicate a higher level of bank opacity. The main variable of interest is *UD Law*, which is an indicator variable equal to one if a BHC is incorporated in a state that has adopted the UD law, and zero otherwise. We control for bank-level characteristics, including *Bank Size*, *ROA*, *Non-interest Income/GTA*, *Loan/GTA*, *Deposits/GTA*, *Equity/GTA*, *Bank HHI*, and *GDP Growth*. Detailed definitions of all variables are provided in Appendix A. Standard errors are clustered at the bank and year level. All accounting variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	C&I Loans	RE Loans	CC Lending	Other Loans	MBS
	(1)	(2)	(3)	(4)	(5)
UD Law	0.201	-0.005**	-0.030***	0.002	-0.002
	(0.17)	(0.00)	(0.01)	(0.00)	(0.00)
Bank Controls	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.787	0.836	0.436	0.320	0.086
N	8,173	8,173	8,173	8,173	8,173

Table 11. UD laws and bank board composition

This table presents the impact of the enactment of UD laws on bank board composition. The dependent variables are: *Board Size*, *Board Independence*, *Independent Audit Committee*, and *Independent Board Financial Expertise*, respectively. *Board Size* is the logarithm value of the number of directors of a board; *Board Independence* is the ratio of the number of independent directors divided by the number of directors of a board; *Independent Audit Committee* is the ratio of the number of audit committee members to the number of independent directors on the board; *Audit Committee Size* is the logarithm value of the size of audit committee; *Independent Financial Expert Director* is the ratio of independent financial expert directors divided by the total number of independent directors of a board. The definition of financial expertise is based on the SEC (e.g., DeFond et al., 2005; Gilani et al., 2021). Specifically, according to SEC' definition, financial expertise is related to current and previous career experience as well as education background. Directors are considered to have a financial working experience if one of the following criteria is met: i) they currently hold or used to hold a position in a bank/financial organization; ii) they have/had experience working as a CFO; iii) they worked as an accountant for a non-financial company. Financial education background includes whether a director has a finance related degree, has an MBA, or has professional credentials such as CFA or CPA. The main variable of interest is *UD Law*, which is an indicator variable equal to one if a BHC is incorporated in a state that has adopted the UD law, and zero otherwise. We control for bank-level characteristics, including *Bank Size*, *ROA*, *Non-interest Income/GTA*, *Loan/GTA*, *Deposits/GTA*, *Equity/GTA*, *Bank HHI*, and *GDP Growth*. Detailed definitions of all variables are provided in Appendix A. Standard errors are clustered at the bank and year level. All accounting variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Board Size	Board Independence	Independent Audit Committee	Audit Committee Size	Independent Board Financial Expertise
	(1)	(2)	(3)	(4)	(5)
UD Law	-0.035***	0.068**	0.097***	0.107*	0.064**
	(0.01)	(0.03)	(0.04)	(0.06)	(0.03)
Bank Controls	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.819	0.749	0.317	0.357	0.379
N	2,336	2,336	2,336	2,336	2,336

Appendix A. List of Variables

Variable	Source	Description
Panel A. BHCs' Variables		
Tail Risk	CRSP	It is defined as the negative of the average stock return on a BHC during the 5% worst returns days for the BHC's stock over the year
IVol Risk	CRSP	It is calculated as the annualized standard deviation of the residuals from the following model: $R_{i,t} = \alpha_i + \beta_{1i}R_{mkt,t} + \beta_{2i}Interest_t + \varepsilon_{it}$; where $R_{i,t}$ is daily stock returns of BHC i, $R_{mkt,t}$ is the excess market returns of the value-weighted CRSP market index, and $Interest_t$ is the changes in the three-month Treasury bill rates.
Total Risk	CRSP	It is calculated as the annualized standard deviation of daily stock returns for each year
Bank Size	FR Y-9C	It is measured as the natural logarithm of the book value of deflated gross total assets/
ROA	FR Y-9C	Return on assets (*ROA*) is the ratio of earnings before taxes and extraordinary items to gross total assets.
Non-interest Income/GTA	FR Y-9C	It is the income from non-traditional banking services, which is measured as the ratio of non-interest income to assets.
Loans/GTA	FR Y-9C	It is the ratio between total loans and total assets.
Deposits/GTA	FR Y-9C	It is the ratio between total deposits and total assets.
Equity/GTA	FR Y-9C 9C/CRSP	It measures the bank franchise value, which is a ratio of market value of equity divided by gross total assets
NPL/GTA	FR Y-9C	*NPL/GTA* is defined as the ratio of the sum of loans past due 30 days or more and nonaccrual loans to total assets.
Charge offs/GTA	FR Y-9C	It is calculated as the sum value of loans and leases removed from the books and charged against loss reserves, and then minus recoveries on delinquent debt.
LLR/GTA	FR Y-9C	It is the ratio of the sum of loan loss reserve to total assets plus the allowance for loan and lease losses and the allocated transfer risk reserve.
LLP/GTA	FR Y-9C	It is the ratio of the amount of loan loss provision to total assets plus the allowance for loan and lease losses and the allocated transfer risk reserve.
Syndicate loan characteristics		
Performance Covenants	Dealscan	It is an indicator variable equal to one if a loan contains performance covenants, which include which includes maximum debt to EBITDA, minimum EBITDA, minimum fixed-charge coverage, minimum interest coverage, maximum senior debt to EBITDA, minimum cash-interest coverage, and minimum debt-service coverage.
Capital Covenants	Dealscan	It is an indicator variable equal to one if a loan contains capital covenants, which include minimum quick ratio, minimum current ratio, maximum debt to equity, maximum debt to tangible net worth, maximum leverage, maximum senior leverage, minimum net worth, and minimum tangible net worth.
Financial Covenants	Dealscan	It an indicator variable equal to one if a loan contains financial covenants.
General Covenants	Dealscan	It is an indicator variable equal to one if a loan contains general covenants, which include dividend restriction, asset sales sweep, assignment restrictions, collateral release, debt-issuance sweep, equity issuance sweep, excess-cash-flow sweep, insurance-proceeds sweep, percentage of excess cash flow, percentage of net income, required lenders, and term changes.
Covenant Intensity	Dealscan	It is an index value ranging from 0 to 6, which is based on six different covenants as described in Bradley and Roberts (2015).
All-in-spread-drawn (AISD)	Dealscan	All-in-spread-drawn is the sum of the annual spread paid over LIBOR for each dollar drawn down from the loan and annual fee.
Total cost of borrowing (TCB)	Dealscan	The total cost of borrowing accounts for fees, spreads, and the likelihood that they will have to be paid. The construction of the variable follows Berg, Saunders and Steffen (2016).
Maturity	Dealscan	Natural logarithm of loan amount in USD million as indicated in the field *DealAmt* in Dealscan.

Facility Amount	Dealscan	Maturity (in months) of the largest facility within-loan package that starts at the loan origination date.
Panel B. Borrower characteristics		
B_Size	Compustat	It is the logarithm value of total assets.
B_ROA	Compustat	Ratio of net income to total assets.
B_Leverage	Compustat	Ratio of book value of total debt to book value of assets.
B_CAPX	Compustat	It is the capital expenditures divided by lagged total assets.
B_Tobin's Q	Compustat	It is the ratio of (book value of assets – book value of equity + market value of equity) to book value of assets.
EM	Compustat	Earnings management are calculated based on the modified Jones model (e.g., Jones, 1991; Dechow et al., 1995), which calculates discretionary accruals. The specific model is: $\frac{TA_{it}}{Asset_{it-1}} = \beta_0 \frac{1}{Asset_{it-1}} + \beta_1 \frac{(\Delta Rev_{it} - \Delta AR_{it})}{Asset_{it-1}} + \beta_2 \frac{PPE_{it}}{Asset_{it-1}} + \varepsilon_{it}$, where TA_{it} is total accruals for firm *i* in year *t*, computed as (change in current assets - change in current liabilities - change in cash + change in debt in current liabilities – depreciation and amortization expense), $Asset_{it-1}$ is total assets of firm *i* in year *t-1*, ΔRev_{it} is the change in revenue, ΔAR_{it} is the change in accounts receivable, PPE_{it} is the gross property, plant and equipment. All these definitions are provided in Kothari et al. (2005). The earnings management is then measured as the signed value of the residual form from the equation as shown above.
R^2	Compustat /CRSP	Defined as ln $\left(\frac{R^2}{1-R^2}\right)$ where R^2 is computed by running a standard Carhart four-factor model on weekly returns within the fiscal year of each listed borrower (Jin and Myers, 2006).
Illiquidity	CRSP	The illiquidity measure introduced by Amihud (2002). The measure is calculated as the average (over the fiscal year) of the ratio between the absolute daily return and the daily dollar volume.
Panel C. U.S. State characteristics		
Bank HHI	FR Y-9C	*Bank HHI* measures the bank competition, which is the concentration of total assets at the state level.
GDP Growth	U.S. Bureau of Economic Analysis	It is the real GDP growth rate at the state level.

Appendix B.

Table B1. Bank holding companies (BHCs) per year

This table presents the number of BHCs for each year over the sample period of 1986-2008.

Year	Number of BHCs
1986	474
1987	508
1988	548
1989	571
1990	592
1991	599
1992	613
1993	619
1994	603
1995	609
1996	609
1997	603
1998	576
1999	572
2000	569
2001	554
2002	540
2003	538
2004	501
2005	487
2006	462
2007	442
2008	421

Table B2: Loan re-negotiations

This table presents the association between the adoption of UD laws and loan renegotiation. In column (1) the dependent variable is the logarithm of one plus the number of loan re-negotiation (including re-negotiation due to loan price increasing, change of loan maturity, decrease of credit). In columns (2) the dependent variable is the logarithm of one plus the number of loan re-negotiation due to pricing increase. The main variable of interest is *UD Law*, which is an indicator variable equal to one if a BHC is incorporated in a state that has adopted the UD law, and zero otherwise. In columns (1) and (2) of panels A and B, we conduct subsample analysis for borrowing firms with above- and below-median earnings management (*High-* and *Low-EM*) of the sample. We control for bank-level characteristics, including *Bank Size*, *ROA*, *Non-interest Income/GTA*, *Loan/GTA*, *Deposits/GTA*, *Equity/GTA*, *Bank HHI*, and *GDP Growth*. Detailed definitions of all variables are provided in Appendix A. Standard errors are clustered at the bank and year level. All accounting variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Renegotiation	Pricing increase
	(1)	(2)
UD law (1 year)	-0.005	-0.016***
	(0.01)	(0.00)
Facility & Bank Controls	Yes	Yes
Bank FE	Yes	Yes
Borrower Controls	Yes	Yes
Borrower Sector FE	Yes	Yes
Facility Start Year FE	Yes	Yes
Adjusted R^2	0.158	0.086
N	8,461	8,461