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Financial misconduct and bank risk-taking: evidence from US banks

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Abstract:

We test for a link between bank risk-taking and regulatory enforcements against US banks for financial misconduct. Misconduct-related enforcements are associated with increased bank risk-taking on several measures of risk, and there is some evidence that the impact of enforcements on risk-taking is accentuated in the presence of powerful CEOs and a higher proportion of institutional investor ownership and mitigated when executive boards are larger, older, more independent, more gender diverse, busier, and where independent directors are relatively inexperienced. The results are robust to alternative measures of bank risk-taking, and alternative estimation techniques, including controlling for endogeneity bias.

Keywords: Bank risk-taking, financial misconduct, CEO power, executive boards, institutional investors

JEL codes: G20, G21, G34

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1. Introduction

Financial misconduct risk is viewed increasingly by researchers and policymakers as a significant threat to the management of financial institutions and to financial system stability generally. Financial misconduct can weaken individual banks if the associated financial penalties and redress costs adversely affect profitability and capital and if reputational penalties cause stakeholders (investors, depositors, employees) to revise their terms of trade with the bank. If misconduct involves multiple markets and systemically important banks, it can also be a source of systemic risk.[2] Moreover, Zingales (2015) suggests that financial misconduct is a "feature rather than a bug" in the financial system, which would make it difficult to avoid and a potential source of systematic risk. Wider recognition of the potential adverse consequences of bank misconduct and the greater frequency and scale of misconduct cases contributed to an international initiative coordinated by the Financial Stability Board (on behalf of the G20 group of countries) to develop measures aimed at reducing misconduct risk for adoption by national regulatory agencies. Subsequently, national regulators in many countries have acted to implement reforms aimed at reducing incentives for misconduct and to improve standards in fixed income, currency, and commodities markets (Financial Stability Board, 2015). This regulatory effort and the associated costs for bank stakeholders mean that a better understanding of the relation between bank misconduct and measures of bank risk-taking is of paramount importance.

[2] For example, there were widespread press reports in September 2016 that the US Department of Justice was seeking a $14 billion civil settlement from Deutsche Bank for allegedly selling toxic mortgage-backed securities, which was equivalent to about four-fifths of the bank's market capitalization at the time and raised doubts about its future viability and concerns about the systemic consequences should it fail (see, for example, Stewart 2016); and the European Systemic Risk Board (2015) reported that after the 2007-08 crisis the largest European banks faced fines that would erase all the capital issued by EU globally systemically important banks during the previous five years, and that the common equity Tier 1 ratios of those banks would have been, on average, around two percentage points higher without the fines.

In this paper we employ annual data for US publicly listed banks over 1998 to 2023 to test the impact of financial misconduct on different measures of bank risk.[3] Our measure of bank misconduct is detected misconduct as indicated by regulatory enforcements and class action litigation against banks by the main US regulatory agencies. We view banks that are the subject of regulatory enforcement as more likely to face financial and reputational penalties in the near future, with possible adverse consequences for profits and capital, and their managers as more likely to engage in excessive risk-taking.

The published empirical work specifically on bank financial misconduct and risk-taking appears to be limited to Köster and Pelster (2018), who report that financial penalties imposed on international banks between 2007 and 2014 were associated with an increase in bank default risk and higher exposure of banks to systemic risk; and Altunbaş et al. (2021) who find a positive link between money laundering enforcements and bank default risk in a sample of US banks. Relatedly, Tarullo (2011) and the European Systemic Risk Board (2015) point out that financial penalties associated with bank misconduct may cause systemic fragility if specific financial services are discontinued and no substitutes are readily available—for example, if bank managers withdraw from the financial markets that have been the focus of past financial penalties and other banks lack the capacity to supply similar services to the affected market. Several other studies find that financial misconduct adversely affects bank performance measures typically associated with risk-taking, including reputational losses (Karpoff et al., 2008) and reduced client engagement (Bhagat et al., 1994; Murphy et al., 2009), as well as broader costs to the financial system such as less financial market participation (La Porta et al., 1997, 1998), and reduced capital flows to mutual funds and venture capital (Cumming and Johan, 2013).

[3] We focus on publicly listed banks because they tend to be larger than non-listed banks, are subject to additional information disclosure regulations, and because data on these institutions is more readily available.

There is substantial research suggesting that bank risk-raking and the impact of misconduct on bank performance can be affected by firms' governance mechanisms. One thread of the literature builds on agency theory to examine the role of executive boards in avoiding firm misconduct, whereby directors' involvement is rooted primarily in their monitoring role (e.g., Fama and Jensen, 1983). Particular attention has been paid to executive board characteristics, including board size and the independence, experience, gender, workload, network size, and average age of the directors. Research on board size has focused on its relation to free-rider problems (Hermalin and Weisbach, 2003), board cohesiveness (Lipton and Lorch, 1992), and access to expert advice (Dalton and Dalton, 2005). The evidence with respect to risk-taking and misconduct is mixed, however, with small boards having been found to be associated with more (Pathan, 2009) and less (Altunbaş et al., 2021) risk-taking, and more (Altunbaş et al., 2018) and less (Schnake and Williams, 2008) misconduct. Independent directors are usually viewed as being more motivated to engage in monitoring, for example, because they may seek to develop reputations as experts in decision control (Fama, 1980; Fama and Jensen, 1983; Dalton and Kesner, 1987). Empirical studies tend to support the view that they are associated with reduced risk-taking by firms (Pathan, 2009; Bouheni et al., 2018; Boateng et al., 2019; Harkin et al., 2020) and with a lower likelihood of engaging in misconduct (Shi et al., 2016; Cumming et al., 2015ab; Harris and Bromiley, 2007; Nguyen et al., 2016; Neville et al., 2019). The experience of independent directors may also impact firm performance, for example, if less experienced ("rookie") directors are more motivated monitors and less captured by management (Holmstrom, 1982; Chen and Keefe, 2020), though a lack of experience may also lead to them to provide inappropriate guidance (Kim et al., 2014). Direct evidence with respect to firm risk-taking is scarce: there is some evidence that firms with rookie directors are relatively high performers (Chen and Keefe, 2020), but also that they are more likely to commit fraud (Bai and Yu, 2022). Female executives have been shown to exhibit greater aversion to

risk (Faccio et al., 2016; Khan and Vieito, 2013) and boards with a larger proportion of female directors appear less likely to engage in misconduct (Arnaboldi et al., 2021; Carter et al., 2024; Qureshi et al., 2024). Boards with "busy" directors (directors serving on multiple boards) may be less effective as monitors of any one firm's performance because of competing claims on their attention and thus be associated with poor governance (Fich and Shivdasani, 2006; Core et al., 1999) and greater risk-taking (Elyasiani and Zhang, 2015) and misconduct (Beasley, 1996; Abebe et al., 2020). Director network size can have a positive impact on firm performance, for example, if it increases access to suppliers, customers or politicians, or to valuable information, but this has to be balanced against the possibility that networks can propagate misleading information or bad management practices (Bakke et al., 2024). Finally, several studies report systematic differences in firm performance, policies, and valuations that are related to the age of the firm's top executives (Bertrand and Schoar, 2003; Davidson et al., 2007; Antia et al., 2010; Yim, 2013) with more conservative outcomes typically associated with older executives. With respect to risk-taking, older executives have been shown to follow more conservative hedging strategies (Croci et al., 2017) and to be associated with less stock volatility and idiosyncratic risk (Serfling, 2014), and there is some evidence that firms with older CEOs are less likely to engage in financial fraud (Xu et al., 2018).

A second thread of the firm governance literature focuses on the role of CEO power in firm risk-taking and misconduct. However, empirical studies are inconclusive, with powerful CEOs having been associated with more (Lewellyn and Muller-Kahle, 2012; Adams et al., 2005) and less risk-taking, and with a higher (Khanna et al., 2015; Hass et al., 2015) or lower (Karpoff et al., 2008) likelihood of engaging in misconduct. A third thread examines the role of institutional investors in firm governance. One the one hand, these investors can contribute to good governance because they have an incentive to collect information and monitor and discipline management to ensure that the firm's investment strategy is consistent with the

objective of maximizing long-term value, rather than meeting short term earnings goals (Shleifer and Vishny, 1986, 1997; Monks and Minow, 1995). On the other hand, monitoring may be costly such that institutional investors sell off their investments in response to unfavorable developments (Manconi et al., 2012). In addition, institutional investors themselves may place excessive emphasis on short-term performance, causing management to be overly concerned about near-term earnings (Yan and Zhang, 2009; Manconi et al., 2012). Empirical studies document that higher levels of institutional investors are associated higher firm valuations and less risk-taking (Borochin and Yang, 2017; Wright et al., 1996; Yang, 2021; Huang et al., 2023) and with a lower likelihood of the firm engaging in misconduct (Dechow et al., 1996; Burns et al., 2010; Dechow et al., 2011). As well as controlling for the influence of executive board characteristics, CEO power and institutional investors on bank risk-taking, we examine the extent to which they condition the impact of misconduct on bank risk-taking.

We report six key results. First, financial misconduct is associated significantly and positively with each measure of bank risk, though the economic size of the impact is generally not large. Second, we find that misconduct raises bank risk whether infractions are one-off or persistent and that the effect is wide-ranging across different categories of misconduct. Third, each measure of bank risk is associated positively with the severity of the infraction as measured by its regulatory classification and the associated financial penalty. Fourth, the impact of bank governance-related variables on risk-taking is mixed. There is some evidence that executive boards that are larger, more independent, older, more gender diverse, busier, and with rookie independent directors are associated directly with reduced risk taking, and evidence that they mitigate the impact on risk-taking of misconduct. Fifth, we find that banks with more powerful CEOs are associated directly with more risk-taking on each measure, and some evidence that risk-taking is in part conditional on CEO power, which accentuates the impact of misconduct

on risk-taking overall. Finally, rather than being effective monitors of bank performance with respect to risk-taking, institutional investors appear to encourage it, which is consistent with these investors emphasizing short-term bank performance. These results hold after controlling for state and year fixed effects, employing alternative estimation techniques, including controlling for endogeneity bias, and after subjecting them to a series of other robustness tests. Our results suggest that regulatory initiatives based on "heightened expectations" of executive boards to contain misconduct and risk-taking may not be sufficient in the presence of powerful CEOs and where institutional investors represent a large portion of bank ownership.

We make several contributions to banking literature. First, we contribute directly to the large literature on the determinants of bank risk, which past studies have shown to include, for example, banks' own characteristics, such as size, capital, and liquidity (Altunbaş et al., 2017), the regulatory and supervisory framework (Laeven and Levine, 2009), banks' operations and funding diversification characteristics (Demirgüç-Kunt and Huizinga, 2010), and their ownership structures (Laeven and Levine 2009). Our paper shows that being subject to regulatory enforcements for misconduct is also a significant driver of bank risk-taking. Second, our paper is related to the growing literature on the determinants and consequences of corporate misconduct (see, e.g., Cumming et al., 2015a, 2017 for recent surveys). We contribute to this literature by focusing on the risk dimension of misconduct. Third, our results support the view that financial misconduct can be a systemic threat to the banking system (European Systemic Risk Board, 2015) and the possibility of a significant misconduct event should be a component of bank stress testing scenarios based on actual events from the past (Cornett et al., 2020). Fourth, we contribute to the literature on governance in banking (e.g., Srivastav and Hagendorff, 2016; Nguyen et al., 2016) that links misconduct to the efficacy of executive board monitoring. We show that the size and composition of executive boards can mitigate the impact of misconduct on bank risk. Fifth, we contribute to the substantial literature on CEO power

(e.g., Veprauskaité and Adams, 2013; Pathan, 2009; Adams et al., 2005) that suggests that powerful CEOs can affect many aspects of firm behavior and outcomes. Our results show that powerful CEOs are generally associated with greater bank risk-taking and that they accentuate the impact of misconduct on it. Finally, we contribute to the 'monitoring v short-termism' debate on the role of institutional investors (Callen and Fang, 2013; Chung et al., 2002) by showing that these investors appear to favor greater risk-taking by banks.

The rest of the paper is organized as follows. In the next section, we set our model, describe the variables used in the empirical estimates, and detail our data sources. The empirical results and their discussion are in Section 3 and the final section concludes.

2. Methodology and data

2.1. Methodology

First, measures of bank risk are regressed on financial misconduct, the governance-related variables, bank-specific controls, a dummy variable to capture the effect of the financial crisis, and a dummy variable to control the survivorship bias of the banks. The baseline model takes the following form:

$$Bank\ risk_{it} = \alpha_0 + \beta_1 FM_{it} + \beta_2 CP_{it} + \beta_3 BS_{it} + \beta_4 BI_{it} + \beta_5 BA_{it} + \beta_6 BG_{it} + \beta_7 II_{it} + \delta X_{it} + D1_t + D2_t + \varepsilon_{it} \quad (2.1)$$

The bank and time variables are represented by the indices i and t, respectively. FM_{it} is the number of financial misconduct enforcements against each bank in a given year. There are four governance-related variables, which are CP_{it}, which is a measure of CEO power in each bank, BS_{it}, BI_{it}, BA_{it}, and BG_{it},which are measures of executive board size, independence, age, and gender, respectively and II_{it} , which is a measure of institutional ownership. X_{it} is a vector of bank-level control variables, and $D1_t$ is a binary variable that takes the value of one in a financial crisis years 2008 to 2010 (zero otherwise) to control for the effects of the financial crisis on bank risk-taking, and $D2_t$ is a binary variable that takes the value of one if the bank

is active between 1998 to 2023 (zero otherwise) to control for bank survivorship bias in the data.

Next, the interactions of the governance variables with financial misconduct are added in Eq. (2.2) below:

$$Bank\ risk_{it} = \alpha_0 + \beta_1 FM_{it} + \beta_2 (FM * GV)_{it} + \beta_3 CP_{it} + \beta_4 BS_{it} + \beta_5 BI_{it} \quad (2.2)$$
$$+ \beta_6 BA_{it} + \beta_7 BG_{it} + \beta_8 II_{it} + \delta X_{it} + D1_t + D2_t + \varepsilon_{it}$$

where GV is either CEO power, board size, board independence, board age, board gender, or the proportion of institutional ownership. Estimating Eq. (2.2) sheds light on the extent to which the influence of financial misconduct on bank risk-taking is conditional on CEO power, board characteristics, and institutional ownership.

We first run fixed effects estimates, but we suspect the results to be biased because of endogeneity. There are least two potential sources of endogeneity. The first is inverse causality between some covariates and the dependent variable. For example, banks with a reputation for excessive risk-taking might attract staff more likely to engage in financial misconduct. In this case, misconduct is partly driven by bank risk rather than the converse. The second source of endogeneity is the omitted variable bias since we cannot control all the determinants of bank risk-taking.

To deal with potential endogeneity, we also present two sets of results based on the instrumental variables approach. In the first case, we use a 2SLS estimator for which we construct two instruments drawn from state-level bank regulation. The first instrument is state-level economic conditions for which we use property crime rates per 100,000 of the state population as a proxy. Crime rates are influenced by a wide array of socio-economic factors and state-level policies, making them exogenous to the risk-taking behavior of individual banks. Levitt (1997) provides evidence that crime rates serve as indicators of local economic conditions that are exogenous to individual firms' risk behavior. Higher crime rates can lead to

increased operational costs and influence customer behaviour, indirectly impacting bank governance and risk management practices. Amiram et al. (2018) argues that economic instability, reflected in crime rates, can indirectly lead to higher misconduct rates. Beck et al. (2006) find that local economic conditions, including crime rates, have a significant impact on banking stability, and they show a link between local economic conditions and bank performance metrics. While property crime rates can affect the economic environment in which banks operate, they do not directly impact their risk-taking behavior, fulfilling the exclusion restriction criterion. Draca et al. (2011) illustrate how economic disruptions caused by crime can indirectly affect business operations without directly altering risk profiles.

The second instrument is state-level annual educational attainment, which we proxy by the percentage of the population aged 25 years or more with at least bachelor's degree. Educational attainment indicates the quality of human capital in a state, affecting the availability of skilled labour for banks. Higher educational levels contribute to better governance, more effective risk management, and informed decision-making within banks. Rajan and Zingales (1998) show that human capital, as reflected by educational attainment, influences firms' organizational efficiency and growth. Higher educational attainment in a state correlates with better human capital quality, which can reduce financial misconduct by promoting better governance practices and ethical standards within banks (Egan et al., 2016). Educational attainment is influenced by long-term socio-economic trends and state education policies (Barro and Sala-i-Martin, 1995) rather than by individual firm behavior, making it exogenous to individual banks' risk-taking behaviour. La Porta et al. (1997) highlight how institutional factors like education influence financial development and governance practices indirectly, without direct effects on risk. These instruments satisfy the criteria of relevance and exogeneity, ensuring that they only influence bank risk taking indirectly through the endogenous explanatory variables. As weak

instruments can produce biased IV results, we report the Stock and Yogo (2005) test statistic for these estimates.

Our second instrumental variable approach is the system Generalized Method of Moments (GMM) (Arellano and Bond, 1991; Arellano and Bover, 1995). The dynamic panel GMM estimator potentially improves on fixed-effects estimates because it allows us to include bank-fixed effects to account for (fixed) unobservable heterogeneity and for current bank risk-taking to be influenced by previous realizations of, or shocks to, risk-taking. The system GMM estimator depends on the assumption that the error term is not autocorrelated and on the validity of the instruments. Accordingly, we report the Hansen (1982) test for the null hypothesis that the instruments used are not correlated with the error term; and the Arellano-Bond (1991) test for the null hypothesis that the errors in the first difference regression exhibit no second-order serial correlation.

2.2. Variables and data

2.2.1. Bank risk-taking

We employ four measures of bank risk-taking. The first risk measure is the Forward Probability of Default (PD) developed by Duan and Van Laere (2012) and the Credit Research Institute (2019). This measure is a forward intensity model that estimates the credit risk of a company in a future period. For example, the 6-month Forward 1-year PD is the probability that the firm defaults during the period from 6 months onwards to 18 months, conditional on the firm's survival in the next 6 months. The PD measure of credit risk is available for all banks in our sample from the Credit Research Institute (CRI) at the National University of Singapore.[4]

[4] The CRI, founded in 2009 at the Risk Management Institute of National University of Singapore, is a non-profit undertaking offering credit risk measures for exchange-listed firms around the world. See Credit Research Institute (2019), Duan and Miao (2016) and Duan and Van Laere (2012) for further discussion.

The second measure is systematic risk, which describes the average stock market reaction of each bank to movements on the overall stock market index. It is constructed using a simple capital asset pricing model, based on the following equation:

$$R_{it} = \beta_0 + \beta_1 R_t + \beta_2 int_t + \varepsilon_{it} \quad (2.3)$$

where, R_{it} is the equity return of bank *i* at time (trading day) *t*; R_t is the return of the S&P 500 index at time (trading day) *t*; and int_t is the yield on the three-month Treasury bill rate at time (trading day) *t*. β_0 is the intercept; β_1 is the systematic risk of bank *i* at time *t*; and β_2 is the interest rate risk. Financial misconduct may increase systematic risk if misconduct in the banking sector was so widespread so as not to be diversifiable against within the sector, for example, if misconduct is a feature rather than a "bug" in the financial system, as suggested by Zingales (2015).

The third measure of risk is a measure of systemic risk, which captures the reaction of individual banks to systemic events and measures tail dependence in the stock market returns of individual banks and equates the magnitude of tail dependence estimates as a measure of systemic risk. Systemic risk is estimated via the marginal expected shortfall (MES) following the model by Acharya et al. (2017) at a standard risk level of 5% as follows:

$$MES_i^{5\%} = {}^{1}/_{days} \sum_t R_i \quad (2.4)$$

where $MES_i^{5\%}$ is the marginal expected shortfall of bank *i* in 5% worst days; $days$ is the number of 5% worst days in the market; R_i is the average return of bank *i* in 5% worst days. Financial misconduct may make a bank more vulnerable to systemic events, for example, because financial penalties and other costs associated with enforcement have weakened banks' capital.

The final risk measure is for idiosyncratic risk which describes the individual (i.e., non-systemic) dimension of bank risk constructed from the component of stock market movements

of each bank I which is unrelated to movements in the overall stock market index. It is constructed as the average of the annual non-overlapping standard deviations of the unexplained component (ε_{ijt}) of a capital asset pricing model calculated from daily logarithmic excess stock market returns for each bank *i* on the broad market index.

2.2.2. Financial misconduct

We focus on detected financial misconduct by publicly listed US banks as captured by the number of regulatory enforcements and class action litigation for financial misconduct by the federal US bank regulatory agencies against each bank for each year over the period 1998-2023. We examine publicly listed banks because they tend to be larger than non-listed banks, are subject to additional information disclosure regulations, and because data on these institutions are readily available. We compile data on misconduct cases from documents of enforcement action and class action litigation judgments from the following sources: the Board of Governors of the Federal Reserve System (FED) Enforcement Action database; the Office of the Comptroller of the Currency (OCC) Enforcement Actions database; the Federal Deposit Insurance Corporation (FDIC) Enforcement Decisions and Orders database; Stanford Law School Securities Class Action Clearinghouse (SCAC) Filings Database; and the Office of Thrift Supervision (OTS) Enforcement Order Archive. Only enforcement actions and class action litigations of institutions are taken into consideration. We then match enforcements against the list of publicly listed US banks as of 31st of December 2023 gathered from S&P Global using the unique RSSD identifier assigned to institutions by the Federal Reserve Board to exclude those cases not matched against listed banks.

Within our sample of 980 banks, we identified 1,113 enforcements involving 360 banks, indicating that many banks were repeat offenders. Summary data on the number of bank financial misconduct cases and the number of repeat offending banks is provided in Table 1. Enforcements peaked during the 2007–10 financial crisis and remained above pre-crisis levels

until 2018-2019, but then declined somewhat thereafter. Many banks in the sample were repeat offenders, with about half of them facing more than one enforcement action and a quarter of them facing at least two such actions. Figure 1 maps the state level occurrence regulatory enforcements, which perhaps not surprisingly take place in the most heavily populated and highly banked states, especially states of New York State and California. In Table 2 we break down the number of cases between technical and nontechnical infractions (Nguyen et al., 2016). Technical misconduct includes, for example, loan loss reserve failures, and nontechnical misconduct includes, for example, the failure to disclose information, managerial misconduct, and money laundering. On this definition, the table shows that the great majority of enforcements were for nontechnical misconduct.

2.2.3. Governance-related variables

Executive board size is measured the number of directors on the board of the bank in any given year, board independence is the percentage of independent non-executive directors on the board, board gender diversity is measured as the proportion of board members that are female, and board age is the average age of board directors. Rookie boards are indicated by a binary variable which takes the value of 1 for boards on which more 50 percent or more of the independent directors have less than three years of experience and zero otherwise. Similarly, busy boards are indicated by a binary variable equal to one if 50 percent or more of the board's outside directors individually hold three or more directorships. Finally, board network size is the natural logarithm of the total number of connections of the board members that overlap in terms of employment, activities, or educational roles at the same company, organization, or institution.

CEO power is measured by an index calculated by applying Principal Components analysis to proxies for CEO power (Adams et al., 2005; Abernethy et al., 2015). The four proxies are CEO tenure, where a CEOs' power is expected to increase with length of tenure because it helps

build decision-making autonomy and the CEO can influence the selection of other board members (Combs et al., 2007); CEO/Chair duality, where the same person holding the CEO and Chair positions simultaneously increases CEO power because it diminishes the role of the board of directors in controlling CEO decisions (Hermalin and Weisbach, 1998) and is a 1-0 dummy with 1 indicating CEO/Chair duality; whether a CEO is also an investor in the firm because the 'convergence of interests' hypothesis predicts that share ownership binds the CEO's economic interests with those of shareholders and provides the CEO with an incentive to maximise firm performance (Fama and Jensen, 1983), and which is a 1-0 dummy with 1 indicating that the CEO received equity-based compensation in a given year; and the size of a CEO's network because networks have been viewed as a means for executives to protect each other on their respective boards (El-Khatib et al., 2015), and which is measured by the total number of people with whom the CEO is acquainted through current and past employment, education, and social contacts. Data for the four CEO power proxies are from BoardEx. The results of the principal components analysis for the construction of the CEO power index are reported in Appendix Table 1. Finally, bank's institutional ownership is represented by the percentage of institutional investors in total bank equity holdings. Data on board characteristics and the CEO power proxies are from BoardEx and on institutional ownership are from Thompson One Banker.

2.2.4. Other variables

We include a large number of bank-specific control variables in the vector $X_{i,t}$. Bank size is measured as the natural logarithm of total assets. Large banks may have incentives to take on more risk if there is a high expectation of a government bailout to prevent systemic risk (Afonso et al., 2014). However, the risk may also decline for large banks because they are better able to diversify their portfolio (Demirgüç-Kunt and Huizinga, 2010). Bank capital is measured by the ratio of risk-weighted capital to total assets for which the coefficient is generally expected to

be negative because well-capitalized banks can more effectively absorb the negative effects of shocks on bank lending (Bernanke and Lown, 1991; Gambacorta and Mistrulli 2004). Banks' loan provisioning is measured by loan loss provisions to total loans. The impact of provisions on bank risk-taking is ambiguous, depending on the motive behind it. For example, forward-looking provisioning designed to smooth earnings dampens discipline over risk-taking, consistent with diminished transparency and inhibiting outside monitoring; in contrast, forward-looking provisioning reflecting timely recognition of expected future loan losses is associated with the enhanced risk-taking discipline (Bushman and Williams, 2012). Bank leverage is measured by the ratio of the total book value of liabilities to total assets. The expected sign on this variable is positive because banks with limited liability tend to take an excessive risk since they do not internalize the losses they impose on depositors and bondholders (Dell'Ariccia et al., 2017). Bank liquidity is measured as the ratio of liquid assets to total assets. The coefficient on this variable is expected to be negative since liquidity is traditionally viewed as a buffer against risks arising from financial and economic stresses. Bank efficiency is measured as the ratio of bank costs to total income. The coefficient on this ratio is expected to be positive as cost and revenue inefficiencies make it more difficult for banks to shore up capital levels and are more prone to risk-taking (Berger and De Young, 1997). Bank profitability is measured as the ratio of net income to total assets. According to the "pecking order theory of finance," because increasing extra capital is costly, it may be easier to accumulate capital via higher retained earnings (Flannery and Rangan 2008). However, greater profitability might also make capital requirements less binding so that banks are less averse to occasional losses through risk-taking (Calem and Rob, 1999; Perotti, et al., 2011). Data for the bank-specific variables are taken from the Call Reports filed by banks on a quarterly basis to the FDIC. We include a dummy variable that takes the value of one over the period 2008 to 2010 (zero otherwise) to capture the effects on bank risk of the financial crisis. Finally, we

include a dummy variable that takes the value of one if the bank is active between 1998 to 2023 (zero otherwise) to control for bank survivorship bias in the data. To reduce the effect of possibly spurious outliers in our series, we winsorize all continuous variables at the 1st and 99th percentile.

Variable definitions and data sources for the variables are presented in Table 3 and summary statistics are reported in Table 4. Pairwise correlation coefficients for the variables are presented in Appendix Table 2. The correlation coefficients are low, which suggests that there is little likelihood of a multicollinearity problem.

3. Empirical results and discussion

3.1. Baseline results

Table 5 presents the baseline results from estimating Eq. (2.1). The table reports results for the four different measures of risk-taking employing the different estimation methodologies. The results are broadly consistent across the measures of risk and methodologies. The coefficients on the financial misconduct variable are positive and statistically significant in each estimate, indicating strongly that misconduct is associated with an increase in bank risk-taking. The economic size of the impact of misconduct on risk-taking appears to be modest, however. A one standard deviation change in financial misconduct (0.302) is associated with an increase bank risk-taking of between 0.02 to 0.03 in the case of credit risk, about 0.06 in the case of systematic risk, 0.02 to 0.28 for systemic risk, and about 0.01 in the case of idiosyncratic risk, where the sample means of the risk measures are 0.44, 0.64, -0.75, and 0.07, respectively.[5] Accordingly, regulatory enforcements for financial misconduct against US banks appear to have a modest impact in raising their risk-taking behavior. These results support the findings of Suss et al (2021), Köster and Pelster (2018), and Altunbaş et al. (2021) who report a positive

[5] Alternatively, focusing of the fixed effects baseline estimates reported in Table 5, a 1% increase in misconduct is associated with an increase in credit risk of 4.9%, in systematic risk of 13.4%, in systemic risk of 7.4%, and in idiosyncratic risk of 1.9% relative to the mean values of these variables.

impact on bank risk-taking of poor bank culture, financial penalties associated with misconduct, and money laundering enforcements, respectively. They also support recent observations on the seriousness of bank misconduct as a systemic threat (European Systemic Risk Board, 2015) and the need to include it as component of bank stress testing (Cornett et al, 2020).

The impact of the governance-related executive board variables on risk-taking is more mixed with the coefficients not always statistically significant. Larger, more independent, more gender diverse, and older executive boards executive boards are generally associated with reduced bank risk-taking, which is consistent with Pathan (2009) Faccio et al. (2016) and Croci et al. (2017). On the other hand, rookie boards and busy boards also appear to reduce bank risk-taking consistent with the results of Kang et al. (2016) and Field et al. (2013), while boards on which directors have larger networks are associated with more risk-taking.

The results provide quite strong evidence that more CEO power is associated with greater bank risk-taking. The coefficients on this variable are positive and generally statistically significant. The economic size of the impact of CEO power on risk-taking varies across risk measures with one standard deviation change in CEO power (0.266) associated with an increase of 0.01 in credit risk, 0.05-0.06 in systematic risk, 0.03-0.09 in systemic risk, and 0.01 in idiosyncratic risk. The result is in line with Lewellyn and Muller-Kahle (2012) and Adams et al. (2005) who report that firms with more powerful CEOs pursue riskier policies, and with the view of Khanna et al. (2015) who argue that corporate misconduct is a potential outcome when a CEO has too much authority.

Finally, we find strong evidence that a higher proportion of institutional ownership is associated with greater credit and systemic risk-taking. This is consistent with research suggesting that institutions' attention and effort as regards monitoring is limited (Liu et al., 2020), that monitoring may be costly (Manconi et al., 2012) and that institutional investors

themselves emphasize short-term bank performance (Yan and Zhang, 2009; Manconi et al., 2012; Callen and Fang, 2013).

The coefficients on the control variables suggest that bank-specific factors are important determinants of risk-taking. Higher levels of bank capital and liquidity provide buffers that reduce the probability of bank distress (Bernanke and Lown, 1991; Gambacorta and Mistrulli, 2004), and more profitable banks are less risky because it is easier to accumulate capital via higher retained earnings (Flannery and Rangan, 2008). In contrast, loan provisioning increases bank risk consistent with it being used to smooth earnings and inhibit outside monitoring (Bushman and Williams, 2012); leverage increases risk-taking because banks do not internalize the losses imposed on depositors and bondholders (Dell'Ariccia et al., 2017); large banks are riskier because they are considered as "too big to fail" (Afonso et al., 2014); and inefficient banks are riskier because they reduce the scope for strengthening capital levels (Berger and De Young, 1997). Although the coefficient is not reported, the financial crisis dummy variable indicates consistently that the crisis was associated with an increase in bank risk-taking as reported by, for example, Altunbaş et al. (2017). In the IV estimates the Stock and Yogo (2005) test statistics consistently reject the null hypothesis of weak instruments, and in the system GMM estimates the Arellano-Bond (1991) and Hansen (1982) test statistics indicate, respectively, that there is no second-order serial correlation in the disturbances and that the instruments used are not correlated with the residuals.

3.2. The persistence and classification of financial misconduct

Our results provide strong evidence that financial misconduct by banks increases their risk-taking. In this section, we examine the robustness of the result to two aspects of financial misconduct: the extent and the type of financial misconduct. In the first case, we are interested in whether risk-taking behavior changes mainly in response to persistent bank financial misconduct. In Table 1 we see that of the 360 banks in our sample that engaged in misconduct,

172 (48%) of them were subject to more than one regulatory enforcement and 89 (25%) of them were subject to more than two enforcements. If repeat offender banks are having a disproportional impact on measures of bank risk, then bank regulators with limited resources may be better off focusing on repeat offender banks. We test for this possibility by including high-offender and low-offender dummy variables in the baseline estimates, where a higher offender is a bank with two or enforcements (dummy equals one for more two or more enforcements and zero otherwise) and a low-offender is a bank with just one enforcement (dummy variable equals one for just one enforcement and zero otherwise). The results for the high offender and low offender banks are presented in Table 6.[6] The coefficients on both the high offender dummy variable (panel A) and the low offender dummy variable (panel B) are positive and generally statistically significant for each measure of bank risk-taking and each estimation methodology. Thus, there appears to be little difference from one-off as opposed to persistent infractions and it is not sufficient for regulators to limit their focus to persistent offenders if they wish to reduce bank risk-taking overall.

In the second case, we are interested in whether risk-taking changes in response to the type of misconduct. In a recent paper, Nguyen et al. (2016) classify misconduct cases as technical if the enforcement action results from violations of requirements concerning factors such as capital adequacy and liquidity, asset quality, lending, provisions, and reserves, and as nontechnical if the enforcement actions are related to failures of a bank's internal control and audit systems, risk management systems, and anti-money laundering systems. They report that monitoring by high-quality boards reduces technical types of misconduct but has no measurable effect on nontechnical types of misconduct. We extend the Nguyen et al. (2016) exercise to ask whether bank risk-taking is also affected by the type of enforcement action

[6] In Table 6 the coefficients on the governance and bank balance sheet variable are not reported for reasons of parsimony but the coefficients are broadly consistent with the results reported in Table 5.

making use of their technical and nontechnical distinction shown in Table 2. In Tables 7 and 8 we repeat our baseline regression results but for a dependent variable which is either the number of technical enforcement actions (Table 7) or the number of nontechnical enforcement actions (Table 8). The coefficients on the financial misconduct variable are positive and statistically significant in each estimation for each measure of bank risk-taking. Thus, both technical and nontechnical financial misconduct are drivers of bank risk. Once again, the coefficients on the other variables in the estimates (not reported) are in line with the baseline results presented in Table 5 and the diagnostic statistics are satisfactory.

3.3. Conditional effects on financial misconduct

In this section we examine whether the impact of misconduct on bank risk is conditional on banks' governance arrangements. To this end, in Tables 9 through 13 we report estimates of Eq. (2.2), which add interaction terms in which the executive board characteristics, CEO power and institutional ownership are multiplied by the financial misconduct term. Table 9 reports results for interactions of financial misconduct and executive board size and independence. Panel A of the table shows that the impact of misconduct on risk appears to be strongly conditional on executive board size with a negative and statistically significant coefficient on the interaction term in all but two of the estimates. The economic size of the impact is quite large with the results indicating that a one standard deviation increase in board size mitigates the effect of a 1 percentage point increase in financial misconduct on bank risk by 0.01 to 0.70.[7] Thus, we find strong evidence that bank financial misconduct is mitigated in the presence of larger executive boards. Panel B reports results for the interaction of financial misconduct and executive board independence. The coefficients on the interaction variable are always negative but are not always statistically significant. They indicate that one standard deviation increase

[7] For example, 0.70 = |-0.352| (coefficient on the interaction term from GMM estimate for systematic risk * 3.178 (standard deviation of board size reported in Table 4).

in board independence reduces the effect of a 1 percentage point increase in financial misconduct on bank risk of about 0.01. Table 10 shows similar results for the interaction of misconduct with board age and with board gender. The results for board gender (panel A) suggest that executive boards with an older average age can mitigate the impact of misconduct on bank risk. The coefficients on the interaction terms are always negative and are mostly statistically significant and have a small economic effect on risk that that ranges between 0.003 to 0.03. The results for board gender (panel B) are somewhat weaker, with coefficients on the interaction term always negative but statistically significant in less than half of the cases and an economic effect of about 0.03.

The results where the misconduct interactions are with the rookie board and busy board variables are reported in Table 11. The coefficients on the interaction terms are negative and generally statically significant for both variables for each measure of risk. That is, the impact of misconduct on risk-taking is reduced when boards have a larger share of rookies and directors are busy. The implication is that "rookies" are especially motivated monitors and that multiple directorships does not undermine the monitoring function. The economic effect ranges between 0.05 and 0.32 in the case of rookie boards and between 0.01 and 1.14 when directors are busy. Table 12 reports the results where the interactions are with executive director network size (panel A) and CEO power (panel B). In both cases, the always positive and generally statistically significant coefficients on the interaction terms suggest that the impact of misconduct on risk taking is likely to be greater when directors have larger networks and CEOs have more power. The economic effect is very modest, however, ranging between 0.001 and 0.02 when directors have larger networks and between 0.003 and 0.10 when CEO's have more power. Finally, Table 13 reports the results where the misconduct interaction is with the indicator of institutional ownership. A greater proportion of institutional ownership of banks accentuates the impact of misconduct on bank risk. The coefficients on the interaction term are

always positive and are statistically significant in all but one estimate and suggest an economic impact on risk of between 0.003 to 0.041.

Our results are robust to three tests that for reasons of parsimony we report in the online appendix to this paper. The first test is propensity score matching in which the treatment is bank misconduct, and the treatment (control) group includes banks which have (have not) been subject to misconduct enforcements. The results are consistent with those from our baseline. In the second test we separate the sample of banks into those that increased their risk-taking and those that reduced it following a regulatory infraction and search for a significant difference between the two population means. We find no significance difference between the two samples. In the final test we develop a 'severity ranking' variable that reflects the type of misconduct and the associated monetary penalties paid by banks engaged in misconduct. We find that more severe penalties for infractions are associated with greater risk-taking behavior by banks.

4. Conclusions

This paper focuses on the link between bank risk-taking and financial misconduct in a sample of US banks. It also investigates the extent to which the persistence and classification of misconduct are drivers of risk-taking and whether the impact on risk-taking of financial executive board characteristics, the power of the CEO, and the importance of institutional investor ownership. Our findings strongly support the view that financial misconduct increases bank risk-taking, though the economic size of the impact is not large. We also find that misconduct raises bank risk whether infractions are one-off or persistent and that the effect is wide-ranging across different categories of misconduct. The impact of bank governance-related variables on risk-taking is more mixed. We find some evidence that larger boards with directors that are older, more independent, more gender diverse, and are associated directly with reduced risk-taking and that these characteristics can to some extent mitigate the adverse

impact of misconduct on risk-taking. On the other hand, directors with larger networks, powerful CEOs, and a larger proportion of institutional ownership are directly associated with greater credit risk-taking and accentuate the adverse impact of financial misconduct on risk-taking. These results are robust to several definitions of bank risk, different estimation methodologies, including to deal with potential endogeneity.

The results have implications for policy. First, and in line with proposals made by other researchers, we believe that there is a strong case that the possibility of financial misconduct as a major event should be included as a component of bank stress testing. Second, the results provide some hope that regulatory initiatives that are based on "heightened expectations" of executive boards can have some success in containing financial misconduct and risk-taking, but reforms are needed to prevent boards' efforts in these regards being undermined by the actions of institutional investors and powerful CEOs.

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Table 1
Financial misconduct enforcements against public listed US banks, 1998-2023

Panel A. Time distribution of enforcements

Year	FED	OCC	FDIC	OTS	SCAC	Total
1998	1				3	4
1999					2	2
2000	4	2	1	7	1	15
2001		2		3	2	7
2002	3	6	1		22	32
2003	11	5	2	3	15	36
2004	9	4	2	2	14	31
2005	9	14	2	6	5	36
2006	4	7	6	3	1	21
2007	7	7	1	3	9	27
2008	10	14	13	3	40	80
2009	39	23	18	12	23	115
2010	51	33	27	13	19	143
2011	28	23	22	13	8	94
2012	16	21	22		8	67
2013	11	32	7		5	55
2014	7	28	7		5	47
2015	18	31	6			55
2016	6	3	15		18	42
2017	16	6	14		8	44
2018	16	5	12		12	45
2019	8	5	8		5	26
2020	9	8	7		2	26
2021	2	2	13		5	22
2022	2	6	5		1	14
2023	7	5	15			27
Total	294	292	226	68	233	1113

Panel B. Banks engaged in repeated misconduct

	Once	More than once	More than twice	More than three times	Total
Number of banks	50	172	89	49	360

Sources: Board of Governors of the Federal Reserve System (FED) Enforcement Action database (https://www.federalreserve.gov/apps/enforcementactions/search.aspx); the Office of the Comptroller of the Currency (OCC) Enforcement Actions database (http://apps.occ.gov/EASearch/); the Federal Deposit Insurance Corporation (FDIC) Enforcement Decisions and Orders database (https://orders.fdic.gov/s/); the Office of Thrift Supervision (OTS) Enforcement Order Archive (https://www.occ.treas.gov/static/ots/enforcement/ots-enforcement-order-listing.xlsx); and the Stanford Law School Securities Class Action Clearinghouse (SCAC) Filings Database (http://securities.stanford.edu/filings.html)

Table 2
Technical and nontechnical misconduct by US banks, 1998-2023

	FED	OCC	FDIC	OTS	SCAC	Total
Panel A. Technical misconduct						
Loan loss reserve failure	23	10	60	1		94
Unsafe and unsound practice	132	45	66	19	69	331
Panel B. Nontechnical misconduct						
Material omission, misstatement, misrepresentation, incompliance and reclassification	25	24	7	3	24	83
Information disclosure failure	11	17	2	5	75	110
Managerial misconduct	22	96	59	24	11	212
Money laundering	40	32	18	14	54	158
Related party transaction failure	41	68	14	2		125
Total crimes (Panel A + Panel B)	294	292	226	68	233	1113

Sources and web links: Board of Governors of the Federal Reserve System (FED) Enforcement Action database https://www.federalreserve.gov/apps/enforcementactions/search.aspx); the Office of the Comptroller of the Currency (OCC) Enforcement Actions database (http://apps.occ.gov/EASearch/); the Federal Deposit Insurance Corporation (FDIC) Enforcement Decisions and Orders database (https://orders.fdic.gov/s/); the Office of Thrift Supervision (OTS) Enforcement Order Archive (https://www.occ.treas.gov/static/ots/enforcement/ots-enforcement-order-listing.xlsx); and the Stanford Law School Securities Class Action Clearinghouse (SCAC) Filings Database (http://securities.stanford.edu/filings.html).

Table 3
Variable definitions and data sources

Variable	Definition	Source
Credit Risk	12-month Forward Probability of Default developed by the Credit Risk Institute in the given year (Duan et al., 2012).	Credit Risk Institute
Systematic risk	Coefficient of the return of S&P 500 index in the estimation of the two-index market model.	S&P Global
Systemic risk	Marginal expected shortfall in 5 percent worst days in the given year.	S&P Global
Idiosyncratic risk	Average of the annual non-overlapping standard deviations of the unexplained component (ε_{ijt}) of a capital asset pricing model calculated from daily logarithmic excess stock market returns for each bank *i* on the broad market index.	Bloomberg
Misconduct	The number of regulatory enforcements and class action litigation for financial misconduct by the main bank US regulatory agencies.	See Table 1
Board size	The number of directors sitting on the executive board.	BoardEx
Board independence	The percentage of independent non-executive directors on the executive board.	BoardEx
Board age	The average age of board members each year.	BoardEx
Board gender	The percent of the board members that are female.	BoardEx
Rookie board	Binary variable that equals 1, if rookie directors (i.e., directors with less than three years of experience) account for more than 50% positions of all independent directors, and 0 otherwise.	BoardEx
Busy board	Binary variable equal to one if 50% or more of the board's outside directors individually hold three or more directorships.	BoardEx
Board network size	Natural logarithms of total number of connections the board members overlap with in terms of employment, activities, or educational roles at the same company, organization, or institution.	BoardEx
Institutional ownership	Percent of ownership by institutional investors.	Bloomberg
CEO power	Derived from the application of Principal Components analysis to four proxies for CEO power: CEO tenure; CEO ownership; CEO duality; and CEO network size in the given year.	Authors' calculation
CEO tenure	The number of years the CEO has served in his/her position.	BoardEx
CEO equity	Binary variable is one if the CEO receives equity compensation and zero otherwise.	BoardEx
CEO/Chair duality	Binary variable that is one if the CEO is also chairman and zero otherwise.	BoardEx
CEO network size	The number of connections the CEO overlaps with in terms of employment, activities, or educational roles at the same company, organization, or institution.	BoardEx
Capital	The ratio of risk-weighted capital to total assets.	Call reports
Liquidity	The ratio of liquid assets to total assets.	BoardEx
Loan provisions	The ratio of loan loss provision to total loans.	BoardEx
Leverage	The ratio of total book value of liabilities to total assets.	BoardEx
Efficiency	The ratio of operating expenses to total operating income.	BoardEx
Profitability	The ratio of earnings before interest and taxes to book value of total assets.	BoardEx
Size	Natural logarithms of total assets.	BoardEx
High offender	Binary variable equal to one if the bank is involved in more than one misconduct in the given year and zero otherwise.	Authors' calculation
Low offender	Binary variable equal to one if the bank is involved just one misconduct in the given year and zero otherwise.	Authors' calculation
Financial crisis	Binary variable equal to one in years 2008 to 2010 and zero otherwise.	Authors' calculation
Active dummy	Binary variable equal to one if the bank is active (not merged/acquired/closed) and zero otherwise.	Authors' calculation
Severity of misconduct	S&P Global Market Intelligence severity classification from 1 (less severe) to 8 (severe) – 0 (no misconduct).	Authors' calculation
Education attainment	Educational attainment percentage (bachelor's degree or more) for people of at least 25 years of age by state.	Saint Louis FED
Property crime	The Number of reported property crime offences per 100,000 population by state.	Federal Bureau of Investigation

Table 4
Summary statistics

Variable	N	Mean	p25	Median	p75	Standard deviation	Minimum	Maximum
Credit risk	11784	0.442	0.024	0.082	0.267	1.892	0	74.11
Systematic risk	11491	0.643	-0.650	0.647	2.440	5.137	-22.72	20.30
Systemic risk	11835	-0.751	-1.168	-0.192	0	1.794	-22.14	21.21
Idiosyncratic risk	20713	0.066	0.011	0.017	0.025	0.828	0.001	64.347
Misconduct	11376	0.043	0	0	0	0.302	0	16
Board size	11882	11.13	9	11	13	3.718	1	33
Board independence	11882	74.85	69.57	80	87.50	20.02	0	100
Board age	11283	61.64	59.09	61.63	64.15	4.108	43.75	79.33
Board gender	11302	12.99	4.762	11.11	20	10.93	0	100
Rookie board	11440	0.291	0.100	0.250	0.400	0.266	0	1
Busy board	10205	0.532	0	1	1	0.499	0	1
Board network size	11882	8.926	8.182	9.002	9.786	1.256	2.773	12.92
Institutional ownership	11708	16.31	0.767	9.34	28.72	17.58	0	100
CEO power	11376	0	0	0	0	0.266	-1.967	3.667
Capital	11391	12.58	10	11.91	14.16	4.440	3.610	46.19
Liquidity	11526	7.297	3.570	5.483	9.388	5.119	1	20.90
Loan provisions	11477	0.615	0.141	0.298	0.604	1.045	0.014	10.33
Leverage	11634	13.09	5.026	10.20	17.56	11.64	0	63.16
Efficiency	11863	64.88	57.49	64.40	71.91	11.68	31.24	95.71
Profitability	11429	0.767	0.501	0.871	1.179	0.664	-1.085	1.783
Size	11730	7.673	6.275	7.138	8.550	2.040	4.302	14.36
Severity Rank	11376	0.138	0	0	0	0.859	0	8
Education attainment	11376	30.19	25.80	29.80	34.40	5.962	15.10	65.40
Property crime	11400	2781.6	2080.1	2633.9	3402.8	905.50	926.90	7117

Notes: Variable definitions and data sources given in Table 3.

Table 5
Financial misconduct, governance and bank risk—baseline estimates

	Credit risk			Systematic risk			Systemic risk			Idiosyncratic risk		
	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Lag of risk indicator			0.255***			0.015***			0.127***			0.752***
			(0.004)			(0.004)			(0.013)			(0.001)
Misconduct	0.069**	0.107***	0.086***	0.188**	0.200**	0.199***	0.103**	0.085**	0.929***	0.027*	0.025*	0.004***
	(0.029)	(0.038)	(0.007)	(0.083)	(0.096)	(0.022)	(0.043)	(0.043)	(0.054)	(0.015)	(0.014)	(0.001)
Board size	-0.013***	-0.026***	-0.014**	-0.013	-0.039	-0.060***	-0.017***	-0.010	-0.027***	-0.001	-0.007**	-0.001***
	(0.004)	(0.009)	(0.006)	(0.010)	(0.026)	(0.007)	(0.006)	(0.010)	(0.007)	(0.002)	(0.003)	(0.001)
Board independence	-0.001	-0.002	-0.034***	-0.003	-0.006	-0.005**	-0.001	-0.004	-0.029***	-0.001	-0.003***	-0.006***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.005)	(0.002)	(0.001)	(0.003)	(0.008)	(0.001)	(0.001)	(0.001)
Board age	-0.003	-0.002	-0.075***	-0.004	-0.018	-0.008	-0.012**	-0.019	-0.205***	-0.006	-0.004	-0.006***
	(0.003)	(0.007)	(0.002)	(0.008)	(0.017)	(0.005)	(0.005)	(0.012)	(0.014)	(0.004)	(0.004)	(0.001)
Board gender	-0.003***	-0.004	-0.001	-0.001	-0.003	-0.004***	-0.003	-0.002	-0.069***	-0.001	-0.001	-0.001**
	(0.001)	(0.003)	(0.001)	(0.003)	(0.008)	(0.001)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)
Rookie board	-0.130***	-0.105	-0.905***	-0.085	-0.419**	0.154	-0.175*	-0.103	-0.064	-0.029	0.001	-0.014***
	(0.042)	(0.076)	(0.048)	(0.120)	(0.175)	(0.138)	(0.092)	(0.100)	(0.250)	(0.024)	(0.024)	(0.003)
Busy board	-0.049**	-0.076*	-0.230***	-0.038	-0.041	-0.311***	-0.043	-0.004	-0.846***	-0.026**	-0.013	-0.049***
	(0.023)	(0.044)	(0.025)	(0.064)	(0.109)	(0.082)	(0.037)	(0.052)	(0.095)	(0.012)	(0.015)	(0.002)
Board network size	0.044***	0.138***	0.075***	0.017	0.004	0.525***	0.069*	0.083**	0.257*	0.003	0.006	0.012***
	(0.013)	(0.036)	(0.008)	(0.035)	(0.120)	(0.031)	(0.040)	(0.038)	(0.154)	(0.007)	(0.013)	(0.001)
Institutional ownership	0.004***	0.012***	0.009***	0.001	0.010**	0.031***	0.022***	0.004	0.017***	0.001	0.001	0.001***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.004)	(0.003)	(0.001)	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)
CEO power	0.042	0.060	0.053***	0.174**	0.220*	0.106***	0.111**	0.172***	0.354***	0.003	0.002	0.002***
	(0.036)	(0.045)	(0.003)	(0.075)	(0.119)	(0.014)	(0.045)	(0.056)	(0.072)	(0.019)	(0.017)	(0.001)
Capital	-0.020***	-0.039***	-0.005***	-0.018**	-0.021*	-0.009**	-0.009	-0.009	-0.379***	-0.004***	-0.005***	-0.001***
	(0.003)	(0.005)	(0.001)	(0.007)	(0.013)	(0.005)	(0.008)	(0.007)	(0.029)	(0.001)	(0.002)	(0.001)
Liquidity	-0.002	-0.003	-0.004***	-0.036***	-0.032***	-0.058***	-0.005	-0.003	-0.052***	-0.002	-0.003*	-0.002***
	(0.003)	(0.005)	(0.001)	(0.009)	(0.011)	(0.006)	(0.005)	(0.005)	(0.008)	(0.002)	(0.002)	(0.001)
Loan provision	0.190***	0.209***	0.052***	0.170***	0.235***	0.120***	0.029	0.047**	0.153***	0.030***	0.024***	0.001***
	(0.013)	(0.022)	(0.006)	(0.035)	(0.054)	(0.018)	(0.023)	(0.021)	(0.025)	(0.007)	(0.007)	(0.001)
Leverage	0.006***	0.009***	0.003***	0.006*	0.006	0.013***	0.002	0.010**	0.091***	0.001	0.001	0.002***
	(0.001)	(0.003)	(0.001)	(0.003)	(0.007)	(0.002)	(0.002)	(0.004)	(0.011)	(0.001)	(0.001)	(0.001)
Efficiency	-0.001	-0.004*	-0.005***	-0.010**	-0.016***	-0.042***	-0.017***	-0.013***	-0.034***	-0.001	-0.001	-0.001**
	(0.001)	(0.002)	(0.001)	(0.004)	(0.005)	(0.004)	(0.003)	(0.002)	(0.004)	(0.001)	(0.001)	(0.001)
Profitability	-0.406***	-0.455***	-0.312***	-0.165***	-0.376***	-0.604***	-0.095***	-0.054	-0.796***	-0.031**	-0.014	-0.002*
	(0.027)	(0.038)	(0.013)	(0.053)	(0.078)	(0.030)	(0.035)	(0.041)	(0.059)	(0.013)	(0.012)	(0.001)
Size	0.020*	0.188***	0.199***	0.026	0.099	0.013	0.224***	0.395***	0.746**	0.031	0.011	0.001
	(0.010)	(0.044)	(0.029)	(0.027)	(0.279)	(0.017)	(0.015)	(0.046)	(0.341)	(0.040)	(0.018)	(0.003)
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	7,393	7,270	7,020	8,073	7,921	7,947	8,262	8,113	7,179	8,184	7,908	7,103
Overall R-squared	0.243	0.187		0.151	0.042		0.619	0.277		0.071	0.024	
Arellano-Bond AR (2) test			0.134			0.287			0.423			0.572
Hansen test for over-identification			0.774			0.794			0.663			0.398
Stock and Yogo test:												
First stage f-statistic		52.552			53.586			16.298			43.081	
Critical value		11.59			11.59			11.59			11.59	

Notes: FE equals year and state fixed effects. Independent variables lagged one period to mitigate endogeneity problems. IV estimates instrument for misconduct. GMM estimates are system GMM. The Arellano-Bond (1991) test is of the null hypothesis that the errors in the first difference regression exhibit no second order serial correlation. The Hansen (1982) test is of the null hypothesis that the instruments used are not correlated with the error term. The test by Stock and Yogo (2005) evaluates the null hypothesis that the instruments are weak. ***, **, and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

Table 6
Financial misconduct, governance and bank risk—distinguishing high and low offender banks

	Credit risk			Systematic risk			Systemic risk			Idiosyncratic risk		
	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A. High offender banks												
Lag of risk indicator			0.263***			0.016***			0.124***			0.752***
			(0.006)			(0.004)			(0.013)			(0.001)
Misconduct	0.057*	0.150***	0.072***	0.208**	0.205**	0.191***	0.083**	0.085**	0.790***	0.030*	0.032**	0.004**
	(0.030)	(0.044)	(0.009)	(0.082)	(0.102)	(0.019)	(0.042)	(0.041)	(0.061)	(0.016)	(0.016)	(0.002)
High-offender dummy	0.261***	0.190*	0.344***	0.359*	0.028	0.163***	0.125	0.039	0.954***	0.019	0.033	0.001
	(0.090)	(0.099)	(0.027)	(0.211)	(0.235)	(0.059)	(0.140)	(0.138)	(0.142)	(0.041)	(0.036)	(0.006)
Governance variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank balance sheet variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	7,393	7,270	7,020	8,073	7,921	8,269	8,262	8,113	6,957	8,184	7,908	7,103
Overall R-squared	0.245	0.189		0.160	0.042		0.619	0.291		0.071	0.024	
Arellano-Bond AR (2) test			0.395			0.366			0.478			0.331
Hansen test for over-identification			0.487			0.678			0.648			0.761
Stock and Yogo test:												
First stage F-statistic		52.738			55.370			16.901			42.914	
Critical Value		11.59			11.59			11.59			11.59	
Panel B. Low offender banks												
Lag of risk indicator			0.251***			0.014***			0.122***			0.752***
			(0.005)			(0.005)			(0.013)			(0.001)
Misconduct	0.066**	0.113***	0.088***	0.074**	0.221**	0.158***	0.098**	0.084**	0.940***	0.029*	0.025*	0.005***
	(0.029)	(0.039)	(0.011)	(0.037)	(0.092)	(0.029)	(0.044)	(0.042)	(0.065)	(0.016)	(0.014)	(0.001)
Low-offender dummy	0.175***	0.259***	0.144***	0.274*	0.060	1.231***	0.001	0.068	0.497***	0.010	0.001	0.014***
	(0.051)	(0.065)	(0.023)	(0.146)	(0.065)	(0.062)	(0.061)	(0.053)	(0.079)	(0.020)	(0.010)	(0.002)
Governance variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank balance sheet variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	7,393	7,270	7.676	8,073	7,921	7,699	8,262	8,365	6,892	8,184	7,908	7,103
Overall R-squared	0.246	0.188		0.159	0.041		0.619	0.289		0.081	0.023	
Arellano-Bond AR (2) test			0.286			0.308			0.401			0.355
Hansen test for over-identification			0.499			0.665			0.619			0.484
Stock and Yogo test:												
First stage F-statistic		49.045			54.543			16.298			43.271	
Critical Value		11.59			11.59			11.59			11.59	

Notes: FE equals year and state fixed effects. Independent variables lagged one period to mitigate endogeneity problems. IV estimates instrument for misconduct. GMM estimates are system GMM. The Arellano-Bond (1991) test is of the null hypothesis that the errors in the first difference regression exhibit no second order serial correlation. The Hansen (1982) test is of the null hypothesis that the instruments used are not correlated with the error term. The test by Stock and Yogo (2005) evaluates the null hypothesis that the instruments are weak. ***, **, and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

Table 7
Technical financial misconduct, governance and bank risk

	Credit risk			Systematic risk			Systemic risk			Idiosyncratic risk		
	FE (1)	IV (2)	GMM (3)	FE (4)	IV (5)	GMM (6)	FE (7)	IV (8)	GMM (9)	FE (10)	IV (11)	GMM (12)
Lag of risk indicator			0.258***			0.055***			0.192***			0.839***
			(0.003)			(0.006)			(0.017)			(0.001)
Misconduct	0.068*	0.059**	0.072***	0.243***	0.266**	0.111***	0.140***	0.080*	0.679***	0.035*	0.033*	0.004***
	(0.036)	(0.029)	(0.007)	(0.094)	(0.104)	(0.033)	(0.050)	(0.049)	(0.053)	(0.019)	(0.019)	(0.001)
Board size	-0.011**	-0.004	-0.039***	-0.022*	-0.010	-0.092***	-0.014*	-0.007	-0.009	-0.002	-0.009**	-0.001***
	(0.005)	(0.007)	(0.006)	(0.013)	(0.022)	(0.009)	(0.007)	(0.014)	(0.008)	(0.003)	(0.004)	(0.001)
Board independence	-0.002	-0.001	-0.021***	-0.003	-0.003	-0.045***	-0.003***	-0.001	-0.025***	-0.001	-0.004***	-0.007***
	(0.001)	(0.002)	(0.002)	(0.003)	(0.005)	(0.004)	(0.002)	(0.003)	(0.008)	(0.001)	(0.001)	(0.001)
Board age	-0.003	-0.013**	-0.031***	-0.007	-0.033*	-0.042***	-0.010*	-0.013	-0.161***	-0.007	-0.005	-0.006***
	(0.004)	(0.006)	(0.003)	(0.009)	(0.017)	(0.010)	(0.005)	(0.013)	(0.014)	(0.005)	(0.005)	(0.001)
Board gender	-0.003**	-0.003	-0.021***	-0.005	-0.004	-0.009***	-0.003	-0.003	-0.060***	-0.001	-0.001	-0.012***
	(0.002)	(0.003)	(0.001)	(0.004)	(0.007)	(0.001)	(0.005)	(0.004)	(0.004)	(0.001)	(0.002)	(0.001)
Rookie board	-0.101*	-0.052	-0.790***	-0.116	-0.033	-0.963***	-0.155*	-0.070	-0.518**	-0.034	-0.011	-0.055***
	(0.052)	(0.055)	(0.057)	(0.147)	(0.180)	(0.108)	(0.093)	(0.094)	(0.206)	(0.031)	(0.034)	(0.007)
Busy board	-0.026	-0.003	-0.116***	-0.038	-0.018	-0.639***	-0.075*	-0.035	-0.672***	-0.035**	-0.017	-0.046***
	(0.028)	(0.035)	(0.025)	(0.074)	(0.112)	(0.073)	(0.042)	(0.056)	(0.085)	(0.015)	(0.021)	(0.004)
Board network size	0.042**	0.021	0.005	0.052	0.059	0.614***	0.086*	0.017	0.276	0.004	0.010	0.011***
	(0.016)	(0.027)	(0.007)	(0.042)	(0.120)	(0.035)	(0.046)	(0.062)	(0.193)	(0.008)	(0.017)	(0.001)
Institutional ownership	0.004***	0.007***	0.006***	0.004	0.009*	0.029***	0.019***	0.003	0.020***	0.001	0.001	0.001***
	(0.001)	(0.002)	(0.001)	(0.003)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
CEO power	0.044	0.030	0.028***	0.090	0.150	0.110***	0.081	0.156**	0.434***	0.003	0.002	0.008***
	(0.039)	(0.043)	(0.005)	(0.106)	(0.149)	(0.038)	(0.063)	(0.072)	(0.093)	(0.030)	(0.028)	(0.001)
Capital	-0.025***	-0.015***	-0.008***	-0.023***	-0.021*	-0.012**	-0.002	-0.011	-0.226***	-0.004**	-0.007***	-0.002***
	(0.004)	(0.004)	(0.002)	(0.008)	(0.013)	(0.005)	(0.009)	(0.008)	(0.027)	(0.002)	(0.002)	(0.001)
Liquidity	-0.004	-0.001	-0.002*	-0.024**	-0.027**	-0.012***	-0.005	-0.001	-0.045***	-0.002	-0.004*	-0.002***
	(0.003)	(0.004)	(0.001)	(0.011)	(0.011)	(0.004)	(0.006)	(0.005)	(0.008)	(0.002)	(0.002)	(0.001)
Loan provision	0.259***	0.086***	0.082***	0.139***	0.198***	0.119***	0.038	0.032	0.155***	0.041***	0.033***	0.002***
	(0.017)	(0.019)	(0.009)	(0.042)	(0.053)	(0.017)	(0.026)	(0.024)	(0.025)	(0.009)	(0.009)	(0.001)
Leverage	0.008***	0.012***	0.006***	0.006	0.008	0.007***	0.002	0.013***	0.094***	0.001	0.002	0.001***
	(0.002)	(0.002)	(0.001)	(0.004)	(0.009)	(0.001)	(0.003)	(0.005)	(0.009)	(0.002)	(0.002)	(0.001)
Efficiency	-0.003**	-0.001	-0.002**	-0.011**	-0.014***	-0.046***	-0.016***	-0.012***	-0.014***	-0.001	-0.001	-0.001
	(0.001)	(0.002)	(0.001)	(0.005)	(0.005)	(0.005)	(0.003)	(0.003)	(0.004)	(0.001)	(0.001)	(0.001)
Profitability	-0.436***	-0.267***	-0.266***	-0.141**	-0.221***	-0.505***	-0.109***	-0.204***	-0.587***	-0.033**	-0.019	-0.004**
	(0.030)	(0.030)	(0.016)	(0.064)	(0.081)	(0.045)	(0.041)	(0.043)	(0.052)	(0.017)	(0.017)	(0.002)
Size	0.010	0.136***	0.313***	0.015	0.567**	0.015	0.254***	0.380***	0.269	0.040	0.003	0.022***
	(0.014)	(0.035)	(0.027)	(0.034)	(0.270)	(0.012)	(0.018)	(0.054)	(0.277)	(0.052)	(0.025)	(0.005)
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	5,720	5,614	5,426	6,295	6,166	6,191	6,457	6,327	5,379	6,384	6,173	5,465
Overall R-squared	0.257	0.194		0.175	0.051		0.597	0.248		0.073	0.021	
Arellano-Bond AR (2) test			0.283			0.252			0.692			0.262
Hansen test for over-identification			0.556			0.645			0.756			0.697
Stock and Yogo test:												
First stage f-statistic		41.417			41.099			19.295			13.235	
Critical value		11.59			11.59			11.59			11.59	

Notes: FE equals year and state fixed effects. Independent variables lagged one period to mitigate endogeneity problems. IV estimates instrument for misconduct. GMM estimates are system GMM. The Arellano-Bond (1991) test is of the null hypothesis that the errors in the first difference regression exhibit no second order serial correlation. The Hansen (1982) test is of the null hypothesis that the instruments used are not correlated with the error term. The test by Stock and Yogo (2005) evaluates the null hypothesis that the instruments are weak. ***, **, and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

Table 8
Nontechnical financial misconduct, governance and bank risk

	Credit risk			Systematic risk			Systemic risk			Idiosyncratic risk		
	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Lag of risk indicator			0.233***			0.011***			0.158***			0.827***
			(0.005)			(0.004)			(0.011)			(0.001)
Misconduct	0.062**	0.113***	0.072***	0.230***	0.204**	0.223***	0.122***	0.090**	1.047***	0.031*	0.028*	0.004***
	(0.029)	(0.040)	(0.008)	(0.085)	(0.092)	(0.025)	(0.044)	(0.043)	(0.064)	(0.017)	(0.016)	(0.001)
Board size	-0.016***	-0.006	-0.033***	-0.012	-0.012	-0.063***	-0.012**	-0.003	-0.034***	-0.001	-0.007*	-0.001***
	(0.004)	(0.010)	(0.005)	(0.011)	(0.029)	(0.007)	(0.006)	(0.010)	(0.007)	(0.002)	(0.004)	(0.001)
Board independence	-0.001	-0.003	-0.044***	-0.003	-0.008	-0.013***	-0.001	-0.002	-0.018**	-0.001	-0.003***	-0.009***
	(0.001)	(0.002)	(0.002)	(0.003)	(0.005)	(0.002)	(0.001)	(0.003)	(0.007)	(0.001)	(0.001)	(0.001)
Board age	-0.005*	-0.023**	-0.113***	-0.001	-0.022	-0.009*	-0.006	-0.003	-0.208***	-0.007	-0.003	-0.006***
	(0.003)	(0.011)	(0.006)	(0.009)	(0.026)	(0.005)	(0.005)	(0.012)	(0.013)	(0.005)	(0.004)	(0.001)
Board gender	-0.004***	-0.006	-0.032***	-0.001	-0.005	-0.003***	-0.003	-0.001	-0.066***	-0.001	-0.001	-0.012***
	(0.001)	(0.004)	(0.002)	(0.004)	(0.008)	(0.001)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)
Rookie board	-0.139***	-0.135	-0.638***	-0.087	-0.269*	-0.313***	-0.074	-0.105	-0.081	-0.037	-0.007	-0.089***
	(0.043)	(0.095)	(0.065)	(0.135)	(0.161)	(0.111)	(0.083)	(0.087)	(0.178)	(0.027)	(0.030)	(0.006)
Busy board	-0.048**	-0.060	-0.537***	-0.040	-0.025	-0.889***	-0.088	-0.036	-0.656***	-0.029**	-0.010	-0.076***
	(0.024)	(0.048)	(0.038)	(0.070)	(0.109)	(0.083)	(0.055)	(0.049)	(0.088)	(0.014)	(0.018)	(0.003)
Board network size	0.059***	0.114***	0.268***	0.035	0.061	0.589***	0.010	0.022	0.096	0.004	0.007	0.021***
	(0.014)	(0.041)	(0.016)	(0.040)	(0.140)	(0.025)	(0.060)	(0.056)	(0.191)	(0.008)	(0.015)	(0.001)
Institutional ownership	0.004***	0.013***	0.007***	0.002	0.011**	0.030***	0.023***	0.002	0.019***	0.001	0.001	0.001***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.005)	(0.003)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
CEO power	0.039	0.061	0.042***	0.163**	0.193*	0.100***	0.082*	0.178***	0.414***	0.003	0.003	0.004***
	(0.036)	(0.046)	(0.005)	(0.077)	(0.113)	(0.014)	(0.042)	(0.051)	(0.054)	(0.021)	(0.018)	(0.001)
Capital	-0.017***	-0.036***	-0.002	-0.018**	-0.019	-0.013***	-0.005	-0.015**	-0.281***	-0.004**	-0.005**	-0.001***
	(0.003)	(0.005)	(0.002)	(0.008)	(0.012)	(0.005)	(0.008)	(0.007)	(0.024)	(0.002)	(0.002)	(0.001)
Liquidity	-0.002	-0.006	-0.008***	-0.034***	-0.027**	-0.093***	-0.003	-0.002	-0.026***	-0.002	-0.005***	-0.004***
	(0.003)	(0.005)	(0.002)	(0.010)	(0.011)	(0.007)	(0.005)	(0.005)	(0.007)	(0.002)	(0.002)	(0.001)
Loan provision	0.165***	0.179***	0.155***	0.183***	0.220***	0.130***	0.019	0.012	0.182***	0.035***	0.026***	-0.001
	(0.014)	(0.026)	(0.013)	(0.038)	(0.053)	(0.015)	(0.023)	(0.022)	(0.035)	(0.008)	(0.008)	(0.001)
Leverage	0.006***	0.007**	0.003***	0.006*	0.012*	0.012***	0.001	0.011***	0.053***	0.001	0.002	0.001***
	(0.001)	(0.003)	(0.001)	(0.004)	(0.007)	(0.002)	(0.002)	(0.004)	(0.012)	(0.002)	(0.001)	(0.001)
Efficiency	-0.002*	-0.006***	-0.005***	-0.011**	-0.017***	-0.033***	-0.019***	-0.016***	-0.032***	-0.001	-0.001	-0.001
	(0.001)	(0.002)	(0.001)	(0.005)	(0.005)	(0.004)	(0.003)	(0.002)	(0.005)	(0.001)	(0.001)	(0.001)
Profitability	-0.417***	-0.482***	-0.238***	-0.191***	-0.282***	-0.525***	-0.028	-0.187***	-0.707***	-0.037**	0.001	-0.008***
	(0.028)	(0.041)	(0.020)	(0.057)	(0.079)	(0.035)	(0.036)	(0.038)	(0.051)	(0.015)	(0.015)	(0.002)
Size	0.016	0.163***	0.074	0.028	0.014	0.024*	0.229***	0.381***	1.476***	0.046	0.011	0.009
	(0.011)	(0.045)	(0.047)	(0.029)	(0.103)	(0.014)	(0.015)	(0.046)	(0.285)	(0.046)	(0.021)	(0.006)
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	6,412	6,312	6,091	7,046	6,918	6,715	7,219	7,094	6,030	7,140	6,898	6,145
Overall R-squared	0.233	0.175		0.141	0.038		0.617	0.279		0.085	0.020	
Arellano-Bond AR (2) test			0.250			0.385			0.490			0.137
Hansen test for over-identification			0.780			0.632			0.795			0.425
Stock and Yogo test:												
First stage f-statistic		50.064			50.614			14.095			40.793	
Critical value		11.59			11.59			11.59			11.59	

Notes: FE equals year and state fixed effects. Independent variables lagged one period to mitigate endogeneity problems. IV estimates instrument for misconduct. GMM estimates are system GMM. The Arellano-Bond (1991) test is of the null hypothesis that the errors in the first difference regression exhibit no second order serial correlation. The Hansen (1982) test is of the null hypothesis that the instruments used are not correlated with the error term. The test by Stock and Yogo (2005) evaluates the null hypothesis that the instruments are weak. ***, **, and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

Table 9
Financial misconduct, governance and bank risk – with board size and board independence interactions

	Credit risk			Systematic risk			Systemic risk			Idiosyncratic risk		
	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A. Board size interaction												
Lag of risk indicator			0.248***			0.011***			0.125***			0.752***
			(0.008)			(0.004)			(0.014)			(0.001)
Misconduct	0.259***	0.228*	2.765***	0.731***	0.725**	3.159***	0.107**	0.086**	0.892***	0.262***	0.210***	0.047***
	(0.098)	(0.137)	(0.185)	(0.282)	(0.303)	(0.149)	(0.042)	(0.041)	(0.070)	(0.055)	(0.052)	(0.004)
Board size	-0.012***	-0.022**	-0.268***	-0.010	-0.017	-0.132***	-0.012**	-0.007	-0.025***	-0.013***	-0.006*	-0.001*
	(0.004)	(0.009)	(0.014)	(0.011)	(0.026)	(0.019)	(0.005)	(0.009)	(0.007)	(0.004)	(0.003)	(0.001)
Misconduct*board size	-0.014**	-0.008	-0.202***	-0.039**	-0.038*	-0.220***	-0.005	-0.007**	-0.003	-0.017***	-0.014***	-0.003***
	(0.007)	(0.010)	(0.014)	(0.019)	(0.021)	(0.011)	(0.003)	(0.003)	(0.002)	(0.004)	(0.004)	(0.001)
Other governance variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank balance sheet variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	7,393	7,270	7,242	8,073	7,659	7,436	8,262	8,365	6,957	8,184	7,908	7,103
Overall R-squared	0.244	0.187		0.159	0.044		0.619	0.270		0.081	0.024	
Arellano-Bond AR (2) test			0.228			0.363			0.360			0.521
Hansen test for over-identification			0.714			0.636			0.822			0.326
Stock and Yogo test:												
First stage F-statistic		53.258			54.248			16.400			42.661	
Critical Value		11.59			11.59			11.59			11.59	
Panel B. Board independence interaction												
Lag of risk indicator			0.244***			0.017***			0.123***			0.753***
			(0.005)			(0.004)			(0.012)			(0.001)
Misconduct	0.082***	0.116***	0.199***	0.226***	0.214**	0.234***	0.107**	0.078*	1.056***	0.162**	0.145*	0.007***
	(0.030)	(0.032)	(0.017)	(0.083)	(0.090)	(0.027)	(0.042)	(0.042)	(0.070)	(0.080)	(0.078)	(0.003)
Board independence	-0.001	-0.001	-0.039***	-0.003	-0.004	-0.004**	-0.002	-0.002	-0.003	-0.001	-0.003***	-0.005***
	(0.001)	(0.002)	(0.003)	(0.002)	(0.004)	(0.002)	(0.001)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
Misconduct*board independence	-0.001	-0.001	-0.006***	-0.002**	-0.002*	-0.001**	-0.001	-0.001**	-0.001*	-0.002*	-0.002	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Other governance variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank balance sheet variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	7,393	7,495	7,020	8,073	7,921	7,699	8,262	8,365	7,179	8,184	7,908	7,103
Overall R-squared	0.243	0.186		0.151	0.042		0.619	0.270		0.081	0.023	
Arellano-Bond AR (2) test			0.372			0.325			0.473			0.542
Hansen test for over-identification			0.821			0.662			0.745			0.652
Stock and Yogo test:												
First stage F-statistic		53.665			54.551			16.234			43.046	
Critical Value		11.59			11.59			11.59			11.59	

Notes: FE equals year and state fixed effects. Independent variables lagged one period to mitigate endogeneity problems. IV estimates instrument for misconduct. GMM estimates are system GMM. The Arellano-Bond (1991) test is of the null hypothesis that the errors in the first difference regression exhibit no second order serial correlation. The Hansen (1982) test is of the null hypothesis that the instruments used are not correlated with the error term. The test by Stock and Yogo (2005) evaluates the null hypothesis that the instruments are weak. ***, **, and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

Table 10
Financial misconduct, governance and bank risk – with board age and board gender interactions

	Credit risk			Systematic risk			Systemic risk			Idiosyncratic risk		
	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A. Board age interaction												
Lag of risk indicator			0.243***			0.012***			0.122***			0.751***
			(0.006)			(0.004)			(0.014)			(0.001)
Misconduct	1.247**	2.248***	0.218***	0.230***	0.215**	0.206***	0.110**	0.078*	0.966***	0.030*	0.026*	0.007***
	(0.492)	(0.673)	(0.016)	(0.084)	(0.091)	(0.028)	(0.044)	(0.042)	(0.079)	(0.015)	(0.014)	(0.001)
Board age	-0.002	-0.011	-0.099***	-0.004	-0.019	-0.001	-0.012**	-0.012	-0.197***	-0.006	-0.004	-0.007***
	(0.003)	(0.011)	(0.004)	(0.008)	(0.015)	(0.006)	(0.005)	(0.011)	(0.012)	(0.004)	(0.004)	(0.001)
Misconduct*board age	-0.019**	-0.034***	-0.009***	-0.003**	-0.003*	-0.001	-0.001	-0.001**	-0.001	-0.001	-0.001	-0.001***
	(0.008)	(0.011)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Other governance variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank balance sheet variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	7,393	7,270	7,242	8,073	7,659	7,699	8,262	7,851	6,725	8,184	7,908	7,103
Overall R-squared	0.245	0.189		0.159	0.044		0.619	0.318		0.081	0.024	
Arellano-Bond AR (2) test			0.490			0.356			0.334			0.408
Hansen test for over-identification			0.752			0.652			0.733			0.357
Stock and Yogo test:												
First stage F-statistic		26.768			49.188			19.389			43.489	
Critical Value		11.59			11.59			11.59			11.59	
Panel B. Board gender interaction												
Lag of risk indicator			0.245***			0.016***			0.127***			0.752***
			(0.005)			(0.004)			(0.013)			(0.001)
Misconduct	0.076***	0.113***	0.137***	0.229***	0.222**	0.218***	0.101**	0.084*	0.797***	0.085***	0.057***	0.008***
	(0.030)	(0.037)	(0.011)	(0.083)	(0.094)	(0.025)	(0.043)	(0.043)	(0.066)	(0.025)	(0.022)	(0.002)
Board gender	-0.004***	-0.004	-0.038***	-0.001	-0.003	-0.005***	-0.003	-0.001	-0.071***	-0.001	-0.001	-0.001***
	(0.001)	(0.003)	(0.002)	(0.003)	(0.006)	(0.001)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)
Misconduct*board gender	-0.001	-0.001	-0.010***	-0.011***	-0.002	-0.001	-0.001	-0.001	-0.012***	-0.003***	-0.002**	-0.001***
	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
Other governance variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank balance sheet variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	6,993	7,270	7,242	7,682	7,659	7,948	7,869	7,851	6,880	8,184	7,908	7,103
Overall R-squared	0.239	0.191		0.172	0.049		0.626	0.308		0.082	0.023	
Arellano-Bond AR (2) test			0.533			0.281			0.492			0.684
Hansen test for over-identification			0.668			0.725			0.869			0.752
Stock and Yogo test:												
First stage F-statistic		25.672			48.667			17.831			41.814	
Critical Value		11.59			11.59			11.59			11.59	

Notes: FE equals year and state fixed effects. Independent variables lagged one period to mitigate endogeneity problems. IV estimates instrument for misconduct. GMM estimates are system GMM. The Arellano-Bond (1991) test is of the null hypothesis that the errors in the first difference regression exhibit no second order serial correlation. The Hansen (1982) test is of the null hypothesis that the instruments used are not correlated with the error term. The test by Stock and Yogo (2005) evaluates the null hypothesis that the instruments are weak. ***, **, and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

Table 11
Financial misconduct, governance and bank risk – with rookie board and busy board interactions

	Credit risk			Systematic risk			Systemic risk			Idiosyncratic risk		
	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A. Rookie board interaction												
Lag of risk indicator			0.248***			0.013***			0.122***			0.752***
			(0.005)			(0.004)			(0.014)			(0.001)
Misconduct	0.079***	0.127***	0.176***	0.216***	0.211**	0.185***	0.106**	0.090**	0.827***	0.111***	0.091***	0.027***
	(0.030)	(0.038)	(0.017)	(0.083)	(0.090)	(0.030)	(0.042)	(0.041)	(0.065)	(0.028)	(0.025)	(0.001)
Rookie board	-0.145***	-0.086	-1.072***	-0.072	-0.238	-1.113***	-0.035	-0.048	-1.195***	-0.009	-0.006	-0.008**
	(0.047)	(0.089)	(0.066)	(0.129)	(0.147)	(0.143)	(0.069)	(0.081)	(0.307)	(0.024)	(0.026)	(0.003)
Misconduct*Rookie board	-0.098	-0.120	-1.200***	-0.406**	-0.439**	-0.057	-0.184	-0.262**	-0.199**	-0.283***	-0.214***	-0.073***
	(0.072)	(0.104)	(0.074)	(0.199)	(0.220)	(0.082)	(0.121)	(0.117)	(0.080)	(0.077)	(0.069)	(0.003)
Other governance variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank balance sheet variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	0.243	0.187		0.150	0.044		0.619	0.270		0.071	0.024	
Overall R-squared			0.332			0.487			0.559			0.216
Arellano-Bond AR (2) test			0.661			0.759			0.781			0.752
Hansen test for over-identification												
Stock and Yogo test:		53.056			54.009			16.525			43.098	
First stage F-statistic		11.59			11.59			11.59			11.59	
Critical Value	0.243	0.187		0.150	0.044		0.619	0.270		0.071	0.024	
Panel B. Busy board interaction												
Lag of risk indicator			0.255***			0.016***			0.122***			0.751***
			(0.005)			(0.004)			(0.013)			(0.001)
Misconduct	0.114*	0.160**	0.213***	0.215**	0.215**	2.045***	0.113***	0.083**	0.979***	0.176***	0.124***	0.006***
	(0.066)	(0.081)	(0.014)	(0.084)	(0.091)	(0.311)	(0.042)	(0.041)	(0.074)	(0.034)	(0.030)	(0.001)
Busy board	-0.047**	-0.078*	-0.293***	-0.023	-0.049	-0.378***	-0.017	-0.001	-0.803***	-0.019	-0.008	-0.050***
	(0.023)	(0.045)	(0.051)	(0.066)	(0.096)	(0.095)	(0.033)	(0.046)	(0.087)	(0.012)	(0.016)	(0.002)
Misconduct*Busy board	-0.055	-0.044	-0.527***	-0.150*	-0.165*	-2.283***	-0.145***	-0.182***	-0.107***	-0.186***	-0.127***	-0.010***
	(0.072)	(0.090)	(0.025)	(0.086)	(0.095)	(0.333)	(0.048)	(0.047)	(0.040)	(0.038)	(0.034)	(0.001)
Other governance variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank balance sheet variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	7,393	7,270	7,224	7,188	7,059	7,071	7,348	7,220	6,957	7,937	7,908	6,883
Overall R-squared	7,393	7,270	7,147	8,073	7,659	7,436	8,262	8,365	6,957	8,184	7,908	8,097
Arellano-Bond AR (2) test	0.243	0.187		0.151	0.045		0.620	0.272		0.070	0.023	
Hansen test for over-identification			0.325			0.364			0.474			0.489
Stock and Yogo test:			0.538			0.791			0.650			0.729
First stage F-statistic												
Critical Value		54.228			55.240			16.066			42.586	

Notes: FE equals year and state fixed effects. Independent variables lagged one period to mitigate endogeneity problems. IV estimates instrument for misconduct. GMM estimates are system GMM. The Arellano-Bond (1991) test is of the null hypothesis that the errors in the first difference regression exhibit no second order serial correlation. The Hansen (1982) test is of the null hypothesis that the instruments used are not correlated with the error term. The test by Stock and Yogo (2005) evaluates the null hypothesis that the instruments are weak. ***, **, and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

Table 12
Financial misconduct, governance and bank risk – with board network size and CEO power interactions

	Credit risk			Systematic risk			Systemic risk			Idiosyncratic risk		
	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM	FE	IV	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A. Board network size interaction												
Lag of risk indicator			0.236***			0.016***			0.121***			0.752***
			(0.005)			(0.004)			(0.014)			(0.001)
Misconduct	0.059**	0.117***	0.091***	0.061	0.132	0.152***	0.100**	0.089**	0.861***	0.019	0.025*	0.004***
	(0.030)	(0.038)	(0.011)	(0.103)	(0.718)	(0.041)	(0.041)	(0.041)	(0.065)	(0.019)	(0.014)	(0.001)
Board network size	0.044***	0.135***	0.225***	0.035	0.123	0.370***	0.001	0.001	0.244	0.002	0.005	0.013***
	(0.014)	(0.039)	(0.013)	(0.037)	(0.115)	(0.039)	(0.036)	(0.053)	(0.178)	(0.006)	(0.013)	(0.001)
Misconduct*Board network size	0.006**	0.008**	0.004***	0.017**	0.007	0.004*	0.003	0.003*	0.016***	0.001	0.001	0.001***
	(0.003)	(0.003)	(0.001)	(0.008)	(0.070)	(0.002)	(0.003)	(0.002)	(0.004)	(0.001)	(0.001)	(0.001)
Other governance variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank balance sheet variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	7,393	7,143	7,224	7,188	6,937	6,849	7,348	7,096	6,957	7,937	7,908	6,883
Overall R-squared	0.247	0.191		0.151	0.042		0.648	0.282		0.068	0.023	
Arellano-Bond AR (2) test	7,393	7,270	7,242	8,073	7,659	7,948	8,262	8,365	6,957	8,184	7,908	8,097
Hansen test for over-identification	0.243	0.187		0.150	0.044		0.619	0.271		0.071	0.024	
Stock and Yogo test:			0.247			0.343			0.327			0.203
First stage F-statistic			0.762			0.517			0.426			0.759
Critical Value												
Panel B. CEO power interaction												
Lag of risk indicator			0.178***			0.014***			0.128***			0.752***
			(0.008)			(0.004)			(0.012)			(0.001)
Misconduct	0.068**	0.111***	0.117***	0.195**	0.199**	0.167***	0.105**	0.079*	0.977***	0.030*	0.026*	0.005***
	(0.029)	(0.039)	(0.019)	(0.083)	(0.091)	(0.024)	(0.042)	(0.042)	(0.063)	(0.017)	(0.015)	(0.001)
CEO power	0.049	0.051	0.052***	0.152*	0.187*	0.063***	0.111***	0.154***	0.091***	0.004	0.002	0.001***
	(0.038)	(0.047))	(0.005)	(0.081)	(0.113)	(0.018)	(0.041)	(0.053)	(0.017)	(0.023)	(0.018)	(0.001)
Misconduct*CEO power	0.216***	0.304***	0.646***	0.008	0.028	0.089***	0.021	0.001	0.095***	0.074	0.041	0.181***
	(0.035)	(0.043)	(0.028)	(0.018)	(0.020)	(0.008)	(0.018)	(0.016)	(0.007)	(0.791)	(0.296)	(0.024)
Other governance variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank balance sheet variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	7,393	7,143	7,224	7,188	6,937	6,849	7,348	7,096	6,957	7,937	7,908	6,883
Overall R-squared	0.247	0.191		0.151	0.042		0.648	0.282		0.068	0.023	
Arellano-Bond AR (2) test			0.345			0.371			0.519			0.466
Hansen test for over-identification			0.760			0.780			0.762			0.865
Stock and Yogo test:												
First stage F-statistic		57.929			56.429			17.540			43.063	
Critical Value		11.59			11.59			11.59			11.59	

Notes: FE equals year and state fixed effects. Independent variables lagged one period to mitigate endogeneity problems. IV estimates instrument for misconduct. GMM estimates are system GMM. The Arellano-Bond (1991) test is of the null hypothesis that the errors in the first difference regression exhibit no second order serial correlation. The Hansen (1982) test is of the null hypothesis that the instruments used are not correlated with the error term. The test by Stock and Yogo (2005) evaluates the null hypothesis that the instruments are weak. ***, **, and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

Table 13
Financial misconduct, governance and bank risk – with institutional ownership interaction

	Credit risk			Systematic risk			Systemic risk			Idiosyncratic risk		
	FE (1)	IV (2)	GMM (3)	FE (4)	IV (5)	GMM (6)	FE (7)	IV (8)	GMM (9)	FE (10)	IV (11)	GMM (12)
Lag of risk indicator			0.152***			0.023***			0.140***			0.751***
			(0.005)			(0.005)			(0.011)			(0.001)
Misconduct	0.065**	0.101***	0.109***	0.196**	0.213**	0.179***	0.095**	0.082**	0.805***	0.026*	0.001	0.004***
	(0.028)	(0.039)	(0.011)	(0.083)	(0.092)	(0.022)	(0.043)	(0.041)	(0.066)	(0.015)	(0.002)	(0.001)
Institutional ownership	0.006***	0.012***	0.007***	0.002	0.003	0.027***	0.014***	0.001	0.015***	0.001	0.001	0.001***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.004)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
Misconduct*institutional ownership	0.012***	0.007***	0.006***	0.001	0.001***	0.001***	0.004***	0.002***	0.002***	0.008***	0.002***	0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Other governance variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank balance sheet variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	0.012***	0.007***	0.006***	0.001	0.001***	0.001***	0.004***	0.002***	0.002***	0.008***	0.002***	0.001***
Overall R-squared	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Arellano-Bond AR (2) test			0.581			0.214			0.261			0.468
Hansen test for over-identification			0.717			0.733			0.824			0.652
Stock and Yogo test:												
First stage F-statistic		57.929			56.429			17.540			43.063	
Critical Value		11.59			11.59			11.59			11.59	

Notes: FE equals year and state fixed effects. Independent variables lagged one period to mitigate endogeneity problems. IV estimates instrument for misconduct. GMM estimates are system GMM. The Arellano-Bond (1991) test is of the null hypothesis that the errors in the first difference regression exhibit no second order serial correlation. The Hansen (1982) test is of the null hypothesis that the instruments used are not correlated with the error term. The test by Stock and Yogo (2005) evaluates the null hypothesis that the instruments are weak. ***, **, and * indicate statistical significance at the 1, 5 and 10% levels, respectively.

Appendix Table 1

CEO power measure: Principal Components Analysis

	First component	Second component	Third component	Fourth component
CEO tenure	0.383	0.640	0.643	0.133
CEO equity	0.619	-0.010	0.497	-0.608
CEO duality	0.259	0.764	-0.556	-0.204
CEO network size	0.635	0.085	0.136	0.756
Eigenvalue	1.348	1.072	0.821	0.758
Proportion of variance explained	0.337	0.268	0.205	0.190

Notes: This table presents the results of applying principal components analysis to four proxies of power based on a CEO's ability to exercise decision-making power. Variable definitions are provided in Table 3.

Appendix Table 2
Correlation matrix for key variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Credit risk (1)	1																							
Systematic risk (2)	0.02	1																						
Systemic risk (3)	-0.18	-0.03	1																					
Idiosyncratic risk (4)	0.32	-0.03	-0.21	1																				
Misconduct (5)	0.06	-0.01	-0.11	0.02	1																			
Board size (6)	-0.05	0.01	-0.08	-0.11	0.09	1																		
Board independence (7)	-0.02	0.03	-0.12	-0.02	-0.01	-0.19	1																	
Board age (8)	-0.09	0.00	-0.12	-0.06	0.01	-0.03	0.13	1																
Board gender (9)	-0.08	0.04	-0.18	-0.11	0.05	0.13	0.21	0.06	1															
Rookie board (10)	-0.01	0.02	0.01	-0.01	0.03	0.09	-0.03	-0.21	0.07	1														
Busy board (11)	-0.02	0.01	-0.10	-0.03	0.10	0.10	-0.17	-0.13	0.07	0.05	1													
Board network size (12)	-0.03	0.05	-0.24	-0.13	0.15	0.46	0.04	-0.08	0.34	0.13	0.32	1												
Institutional ownership (13)	-0.07	0.06	-0.34	-0.15	0.06	0.07	0.16	0.22	0.36	0.03	0.21	0.47	1											
CEO power (14)	-0.02	-0.01	0.02	-0.02	0.00	-0.03	0.01	0.04	-0.02	-0.07	-0.01	-0.01	0.03	1										
Capital (15)	-0.16	-0.02	-0.04	-0.09	-0.02	-0.16	0.06	0.15	0.09	-0.02	-0.06	-0.04	0.09	-0.02	1									
Liquidity (16)	-0.02	0.06	-0.10	0.00	0.11	0.16	-0.09	-0.03	0.13	0.06	0.13	0.24	0.10	-0.03	0.17	1								
Loan provisions (17)	0.32	-0.03	-0.29	0.29	0.13	-0.04	-0.03	-0.09	-0.08	0.00	0.06	0.03	0.00	-0.02	-0.06	0.07	1							

Leverage (18)	0.14	0.000	0.001	0.007	0.112	0.115	-0.027	-0.211	-0.005	0.006	0.115	0.112	0.000	0.001	-0.118	0.000	0.111	1					
Efficiency (19)	0.15	-0.002	0.006	0.112	0.001	-0.007	0.003	-0.114	-0.006	0.007	0.000	-0.005	-0.144	-0.004	0.022	0.009	0.009	-0.005	1				
Profitability (20)	-0.036	0.007	0.116	-0.034	-0.004	0.009	0.000	0.009	0.009	-0.004	0.004	0.009	0.115	0.008	0.110	-0.003	-0.043	-0.110	-0.057	1			
Size (21)	-0.003	0.005	-0.330	-0.116	0.244	0.488	-0.008	0.003	0.034	0.111	0.035	0.644	0.544	-0.002	-0.008	0.034	0.006	0.035	-0.222	0.144	1		
Severity Rank (22)	0.09	-0.001	-0.112	0.003	0.766	0.008	0.001	-0.001	0.006	0.003	0.110	0.014	0.007	0.001	-0.001	0.113	0.114	0.110	0.003	-0.007	0.222	1	
Education attainment (23)	-0.008	0.005	-0.113	-0.006	0.002	0.001	0.015	0.026	0.036	0.004	-0.003	0.026	0.031	-0.001	0.111	0.113	-0.110	-0.009	-0.002	0.002	0.018	0.002	1
Property crime (24)	0.11	-0.002	0.116	0.110	-0.005	-0.003	-0.117	-0.026	-0.333	-0.002	-0.002	-0.027	-0.331	0.001	-0.014	-0.110	0.012	0.006	0.003	-0.004	-0.025	-0.004	-0.057	1

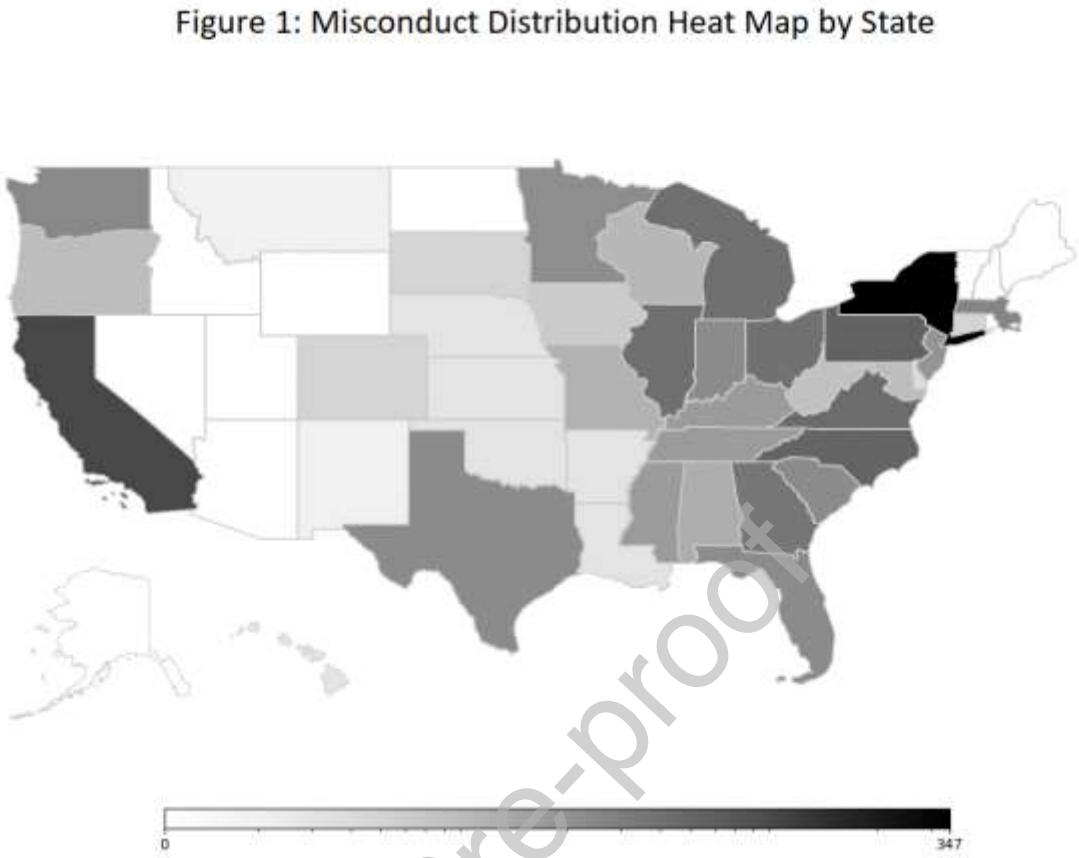

Figure 1: Misconduct Distribution Heat Map by State

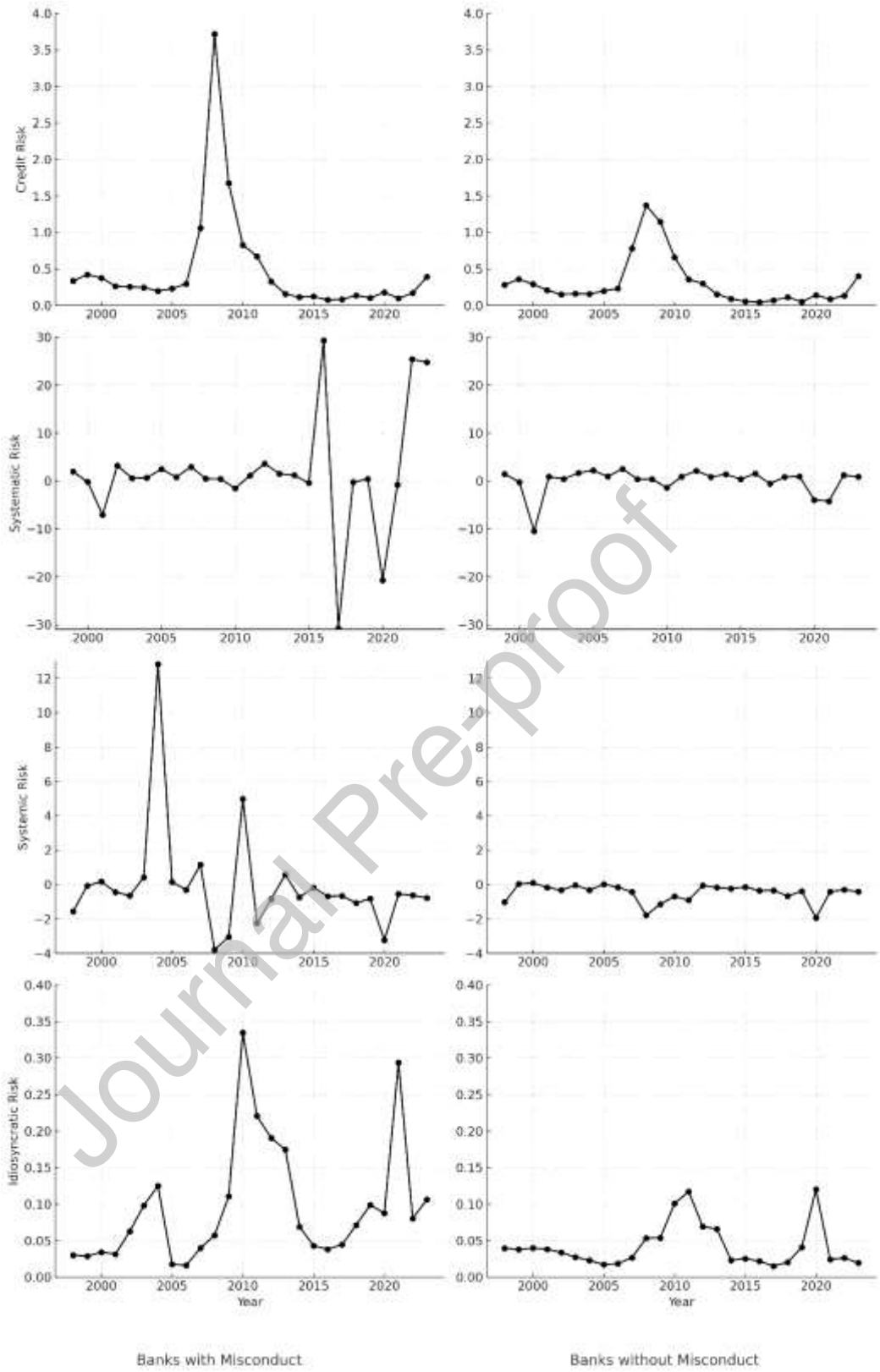

Figure OA 1: Annual Risk Comparison Across Samples

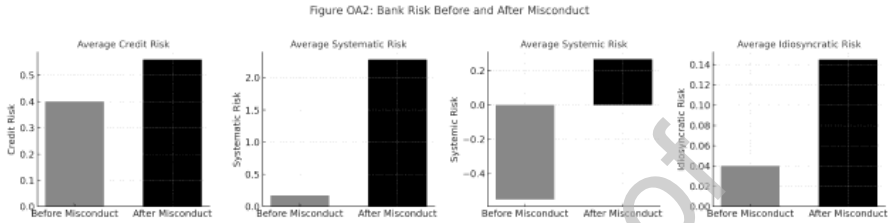

Figure OA 2: Bank Risk Before and After Misconduct