Can Bank Boards Prevent Misconduct?

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Abstract

We study regulatory enforcement actions issued against US banks to show that both board monitoring and advising are effective in preventing misconduct by banks. While better monitoring by boards prevents all categories of misconduct, better advising prevents misconduct of a technical nature. Board monitoring increases the likelihood that misconduct is detected, increases the penalties imposed on the CEO and alleviates shareholder wealth losses following the detection of misconduct by regulators. Our paper offers novel insights on how to structure bank boards to prevent bank misconduct.

JEL Classifications: G20, G30, K20
Key words: banks**,** enforcement actions, board monitoring, board advising, misconduct

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1. Introduction

The reputation of banks for professional and ethical conduct is in sharp decline. Over recent years, regulators have taken record numbers of enforcement actions against banks to require them to take corrective measures against misconduct. Among the banks engulfed in misconduct cases are various high-profile institutions. For instance, JPMorgan has faced several enforcement actions related to credit card fraud, money laundering and internal accounting controls over the past few years.[1] Misconduct cases are costly to bank investors with the fines imposed often outweighed by substantial reputational losses for offending banks. There are also concerns that repeated incidences of misconduct erode public confidence in the safety and soundness of the banking sector. What banks can do to prevent misconduct is therefore an important question. Arguably, a bank's board of directors, in its capacity to monitor and advise the CEO (Adams and Ferreira, 2007; Fama and Jensen, 1983), should play a key role in the implementation and oversight of controls to mitigate the risk of misconduct.[2] The purpose of this paper is to test this assertion. Specifically, we examine whether the two key functions of bank boards, monitoring and advising, are effective in preventing misconduct by banks. We use regulatory enforcement actions against banks to identify banks that engage in misconduct.

In some ways, the recent flood of misconduct cases in banking is surprising. One explanation for misconduct holds that when a CEO has too much authority within the firm, misconduct is but one potential outcome (Khanna, Kim, and Lu, 2014). However, by most

[1] "OCC to hit JPMorgan Chase With Enforcement Actions", 14 January 2013, Dow Jones

[2] Regulators increasingly see boards as key to shaping a bank's risk culture with a view to preventing misconduct. Recent regulatory guidelines issued by the Office of the Comptroller of the Currency (2014) establish 'heighted expectations' of the role of the board in ensuring that banks operate in a safe and sound manner. Similar expectations of the role of bank boards are expressed by the Financial Stability Board (2014).

accounts, oversight of CEO decision-making has improved markedly in recent years. Data from Riskmetrics show that eight out of ten members of an average US bank board are classified as independent in 2012, up from around half in 2000. With increasing levels of independence, one would expect bank boards to be more effective at preventing misconduct. However, far from decreasing misconduct cases by banks, the number of enforcement actions has increased from 5 to 28 over the same time period.

The spike in bank misconduct cases under steadily more independent boards is consistent with the view that true board independence is difficult to achieve (e.g., Coles, Daniel, and Naveen, 2014; Lee, Lee, and Nagarajan, 2014). Board independence can be undermined if CEOs exert intangible influence over those charged with monitoring them. One way in which a CEO could yield intangible influence is by capturing the board through director appointments (Khanna, Kim, and Lu, 2014). Since the CEO is typically involved in the process of recommending directors to the board, directors appointed during the tenure of the current CEO have an incentive to return the favor (Coles, Daniel, and Naveen, 2014; Khanna, Kim, and Lu, 2014). Even independent directors may reciprocate the CEO's requests and agree to side with the CEO to support, engage in or conceal wrongdoing. Following this line of argument, only directors appointed before the current CEO's tenure are free from this type of intangible influence and are therefore capable of objectively monitoring the CEO. In this paper, we measure the quality of board monitoring using the fraction of directors who are appointed before the current CEO takes office (*Monitoring Quality*).

In addition to monitoring, boards also advise the CEO. Advice is critical because CEOs may not always possess the knowledge and skills required to make decisions that lower incidences of wrongdoing. Since the banking sector is complex and skill-intensive (Philippon and Reshef, 2012), bank CEOs may be prone to missteps in the absence of technical expertise. Therefore, boards with the capability to advise effectively could assist CEOs in making better decisions and thus play a crucial role in reducing incidences of bank misconduct. We proxy for the quality of board advice using the connections that a director has with directors at other firms at any given time (*Advising Quality)*. We focus on director connections because connections arise when a director has qualities that make them valuable to many firms (Coles, Daniel, and Naveen, 2012). Demand for director services arises from a director's ability to provide useful advice, information or contacts. Furthermore, connected directors have better access to information which would allow them to offer better-quality advice to the CEO.

To identify bank misconduct, we employ a unique dataset of regulatory enforcement actions issued by the three US supervisory bodies (the Federal Reserve Board (FRB), the Federal Deposit Insurance Corporation (FDIC) and the Office of the Comptroller of the Currency (OCC)) against banks that engage in unsafe, unsound and illegal banking practices which violate laws. One concern with our analysis is that we can only observe detected misconduct (once an enforcement action has been issued), but not the population of all committed cases of misconduct. That is, even in the absence of enforcement actions, a bank may still have engaged in undetected misconduct. To address this problem of partial observability, we follow Wang (2013) and Wang, Winton, and Yu (2010) to employ a bivariate probit model that disentangles committing misconduct from the detection of misconduct conditional upon having committed misconduct.

We find that a bank where *Monitoring Quality* is high (all directors have been appointed before the CEO takes office) has a 23% lower probability of committing misconduct and a 34% higher probability of detection (conditional upon misconduct having occurred) than a bank where all directors have been appointed under the current CEO. Further, a one-standard-deviation increase in *Advising Quality* reduces the likelihood that misconduct is committed by 7% and increases the likelihood of detection by 11%. Our results are robust to two-stage instrumental variable (IV) analysis that circumvents endogeneity concerns by exploiting the role of the local labor market in supplying directors to a bank. Specifically, we use the distance from a bank's headquarters to the nearest airport and the population of the county of a bank's headquarters as sources of exogenous variation in our measures of board monitoring and advice. In a nutshell, we argue that banks in remote locations will see higher director turnover and struggle to recruit directors of high advising capability. Further, in all specifications, we control for the proportion of independent directors and the number of directors with financial expertise. We find that these traditional measures of board monitoring and advising have little or no power to prevent bank misconduct.

We are able to rule out alternative economic interpretations of our results. First, one may argue that our measure of board monitoring quality captures the effect of CEO tenure. We address this by constructing *Residual Monitoring Quality* as the residual from a regression of *Monitoring Quality* on CEO tenure. Our results continue to hold when using residual monitoring, which removes any correlation between *Monitoring Quality* and CEO tenure, in our analysis. Second, our monitoring measure may capture director experience as longer-tenured directors are less likely to have been appointed by the current CEO. As with CEO tenure, we construct *Residual Monitoring Quality* as the residual from a regression of *Monitoring Quality* on average board tenure. Our results remain robust to using this alternative measure of monitoring quality. Further, our results on *Advising Quality* are robust when controlling for "Board busyness" (Fich and Shivdasani, 2006). Finally, and perhaps most importantly, our measure of board advising quality is distinct from monitoring quality, as demonstrated at numerous points throughout this study. For instance, we differentiate between type 1 misconduct, which includes violations of financial safety and soundness (e.g. when banks violate capital requirements), and type 2, which includes violations of internal organizational practices and can involve charges of money laundering and fraudulent behavior. We find that while *Monitoring Quality* reduces both types of misconduct, *Advising Quality* only reduces type 1 misconduct and has no effect on type 2 misconduct. Evidently, board advising is effective for misconduct of a more technical nature.

How do board monitoring and advising prevent bank misconduct? We study two channels that help explain the results. First, many enforcement actions are issued when bank fundamentals indicate increased bank risk. Our results show that better monitoring and advising prevent enforcement actions because these boards are associated with higher bank capital cushions, lower portfolio risk and fewer non-performing loans. Second, CEOs will be deterred from committing wrongdoing if they know *ex-ante* that a board will penalize them for incidences of misconduct. We find that boards that are not captured by the CEO are more willing to impose heavier penalties on the CEO following detected misconduct. That is, after misconduct is detected, better *Monitoring Quality* is associated with a larger reduction in (i) the level of CEO pay, (ii) the level of CEO pay relative to the other top executives at the same bank (the CEO pay slice), and (iii) the value of CEO risk-taking incentives.[3] In contrast, *Advising Quality* does not affect CEO discipline, consistent with our argument that *Advising Quality* is distinct from and unrelated to *Monitoring Quality*.

[3] The finding of a reduced CEO pay slice is of particular significance because it indicates that, by disciplining CEOs relative to other bank executives, boards hold CEOs at least in part responsible for misconduct.

Finally, we examine whether the stock market reaction to bank misconduct is affected by our measures of board quality. We find a positive relation between the announcement returns and board quality, implying that effective boards are associated with less severe fraud. Thus, effective boards not only reduce the likelihood of wrongdoing, but they also alleviate shareholder wealth losses upon announcements of wrongdoing.

This paper makes several important contributions. First, our work is related to the debate on governance and risk-taking in the banking industry (Adams and Ragunathan, 2013; Beltratti and Stulz, 2012; Ellul and Yerramilli, 2013; Minton, Taillard, and Williamson, 2014). We contribute to this literature by providing the first empirical work that studies the effectiveness of bank boards in preventing enforcement actions in the banking sector. Relative to other bank risk measures studied in the literature, enforcement actions provide a suitable identification of the effectiveness of internal governance. This is because enforcement actions provide an unambiguous external indicator of undesirable conduct in the industry. Further, since regulators determine enforcement, the degree of enforcement varies exogenously across banks. Additionally, our empirical approach allows us to elicit the specific mechanisms through which corporate governance affects misconduct tendency in banking.

Second, our paper contributes to the literature on the determinants and economics of corporate misconduct. Previous work has linked misconduct to a lack of monitoring by the board (Agrawal and Chadha, 2005; Beasley, 1996; Chidambaran, Kedia, and Prabhala, 2012; Hegde and Zhou, 2014; Khanna, Kim, and Lu, 2014), outside investors (Wang, Winton, and Yu, 2010) or various other parties (Dyck, Morse, and Zingales, 2010; Kedia and Rajgopal, 2011). We contribute to this literature by identifying the role of advising in explaining misconduct. To distinguish advising from monitoring, we rely on the fact that our sample has both more technical types of misconduct (type 1) and less technical types of misconduct (type 2). While monitoring is required to deter all sorts of misconduct, advising should only play a clear role in preventing misconduct of a more technical nature.

Finally, we contribute to the literature on the role and design of corporate boards (e.g., Adams, Hermalin, and Weisbach, 2010; Coles, Daniel, and Naveen, 2012, 2014; Field, Lowry and Mkrtchyan, 2013; Minton, Taillard, and Williamson, 2014). The key question in this literature is whether boards matter for firm outcomes, and if they do, which particular board functions matter. We present the first empirical study that simultaneously considers the effects of board monitoring and advising. Our results on how board monitoring and advising jointly and differentially affect misconduct are new to the literature.

The next section discusses our hypotheses development, empirical design, data description and summary statistics. Section 3 displays the main results. Section 4 shows the channels through which effective boards reduce wrongdoing. Section 5 presents our event study results and Section 6 concludes the paper.

2. Research design

2.1 Hypotheses development

Our first hypothesis that better board monitoring reduces the commission of bank misconduct is grounded in social influence theory. Social influence theory posits that individuals often rely on principles of reciprocity, a nearly universal code of moral conduct, when making decisions (Gouldner, 1960). The theory indicates that most people exhibit a psychological aversion to over-benefiting or under-benefiting from social relationships and will sacrifice resources to avoid such inequity (Fehr and Schmidt, 1999). Studies have shown that when people receive specific forms of help from another person, they tend to be motivated to return the service, given the right opportunity, to avoid the psychological distress created by over-benefiting from this relationship.

In the present context, as the CEO is typically involved in appointing and recommending directors to the board, those appointed by the CEO tend to feel indebted to the CEO and thus have a natural tendency to return the favor (Coles, Daniel, and Naveen, 2014; Khanna, Kim, and Lu, 2014; Landier et al. 2013). This weakens the ability of the board to monitor and creates an environment conducive to misconduct. We therefore predict that directors appointed before the current CEO are psychologically "independent" and in a position to objectively monitor the CEO in a way that prevents wrongdoing. Formally, we hypothesize:

Hypothesis 1: *Monitoring Quality reduces the likelihood of bank misconduct.*

Our second hypothesis relates board advising to bank misconduct. We use director connections as an indicator of board advising because better-connected directors can lever their network to access better information and should, overall, be better advisors to the CEO (Coles, Daniel, and Naveen, 2012; Field, Lowry, and Mkrtchyan, 2013). However, better-connected directors may also be constrained for time and therefore are unlikely to be effective monitors. Coles, Daniel, and Naveen (2012) find that connected directors have no significant impact on monitoring the CEO.

Director connections should be particularly effective in preventing misconduct in complex environments when the demand for advice from directors is high. Consistent with this argument, Field, Lowry, and Mkrtchyan (2013) find that IPO firms benefit from having well-connected boards. Similarly, Coles, Daniel, and Naveen (2012) show that as firm complexity increases and firms need to rely more on their directors for advice, firm value increases with director connections.

In this paper, we distinguish between two types of bank misconduct. Type 1 misconduct, which is caused by enforcement actions that are received due to violations of financial safety and soundness, and type 2 misconduct, which is caused by enforcement actions that are received due to violations of the requirements regarding the bank's internal organizational practices. The key difference between these two types of misconduct is the degree of technical input required from the board to avoid the misconduct. For instance, to avoid type 1 enforcement actions, banks, among other things, need to maintain an appropriate level of regulatory capital which requires a range of technical skills, including fine-tuning bank portfolio risks to asset values. By contrast, less technical expertise is required from directors to avoid type 2 enforcement actions, for instance to ensure that banks do not engage in fraudulent behavior. Thus, CEOs will need to rely on board advice to handle issues related to type 1 misconduct. By contrast, type 2 misconduct should not be related to board advising quality. Therefore, we do not expect board advising to play a role in reducing type 2 misconduct. Formally, we hypothesize:

Hypothesis 2a: *Advising Quality reduces the likelihood of type 1 misconduct.*

Hypothesis 2b: *Advising Quality does not affect the likelihood of type 2 misconduct.*

2.2 Sample construction

We gather data on regulatory enforcement actions issued by the three main US banking supervisory authorities (FDIC, FRB and OCC) for the period 2000–2013 from SNL Financial.[4]

[4] Enforcement is a key tool that regulators use to ensure that banks maintain safe and sound practices (Delis and Staikouras, 2011). Typically, regulators conduct on-site examinations to ensure that bank operations are consistent

Our sample encompasses all severe enforcement actions, including (1) Formal agreements, (2) Cease and desist orders and (3) Prompt corrective actions.[5]

In the next step, we obtain all banks with accounting data from commercial bank and bank holding company data (FFIEC 031/041 and FR Y-9C). To allow for a lag structure in our dataset, our sample period is from 1999 to 2012. We then obtain market data from the Center for Research in Securities Price (CRSP) and corporate governance data from the BoardEx database and match them with our Call Reports sample.

We then match the name, city and state of each bank that received enforcement actions to our panel dataset. This results in a matched sample of 311 enforcement actions. We then use Factiva to search for newspaper articles reporting the news of the enforcement action and screen each to ensure that we have correctly attributed the enforcement action to a particular bank. If there are multiple enforcement actions relating to a single case of misconduct, we group them together so that only one case is identified. Our final working sample contains 4,072 bank-year observations of 533 unique banks and 244 enforcement actions.

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with sound banking practices. When on-site examinations reveal unsound or illegal banking practices, regulators will make an informal enquiry to the bank management. This gives the bank the opportunity to justify their practices. The regulator will only issue an enforcement action when there is substantial evidence of misconduct. Therefore, one advantage of using regulatory enforcement actions to identify banks that engage in misconduct is that there is a very low chance of misdetection and thus a low chance of misidentifying banks engaged in misconduct.

[5] *Formal (written) agreements* are agreements between the bank and the regulator that set out details on how to correct conditions that provide the basis for the agreement. *Cease and desist orders* prohibit the bank from engaging in certain banking activities. They also require the bank to take corrective actions to improve on areas that provide the basis for the order. *Prompt corrective actions* are imposed on undercapitalized banks. They require the bank to restore adequate levels of capital and demand submission of a capital restoration plan within a predetermined period.

We then classify enforcement actions according to their underlying rationale and their relevance to bank safety and soundness by manually examining the newspaper coverage and bank supervisory authorities' websites. Our classification method largely follows Berger et al. (2014).[6] Type 1 encompasses those actions that are at the core of financial safety and soundness, including capital adequacy and liquidity, asset quality, provisions and reserves, large exposures and exposures to related parties. Type 2 comprises actions that are related to violations of the requirements regarding a bank's internal organizational practices. This includes violations of internal control and audit systems, risk management systems, money laundering, breaches concerning the fitness and property of banks' board members and senior management and other heterogeneous wrongdoing.

[Table 1 around here]

Out of the 244 enforcement actions in our sample, there are 147 type 1 enforcement actions ("financial safety and soundness") and 97 type 2 enforcement actions ("bank's internal organizational practices"). Table 1 shows that enforcement actions were taken against banks in every year with a surge after the 2007 financial crisis. We demonstrate in Section 6.6 that the results we report are not dependent on the time period analyzed in this paper and equally hold before 2007.

2.3 Empirical design

Empirical research on corporate misconduct faces an inherent challenge, namely that misconduct is not observed until it has been detected. This means the outcome we observe is the product of

[6] Instead of classifying the enforcement actions based on their degree of technicality, Berger et al. (2014) rely on the business functions of the bank that is affected by the enforcement action.

two processes: the commission of misconduct and the detection of misconduct. As long as detection is not perfect, we do not observe every instance of misconduct that has been committed. Poirier (1980) proposes a bivariate probit model to address this problem of partial observability. The intuition behind the model is that there are factors that affect the likelihood that misconduct is detected but not a bank's incentives to commit wrongdoing. Likewise, there are factors that incentivize misconduct but do not affect the likelihood that misconduct is detected. The following distinguishes between the commission and the detection process underlying misconduct. Let M_{it} and D_{it} represent whether bank i commits wrongdoing in year t and whether the misconduct is detected, respectively:

$$M_{it}^* = X_{M,\,it}\,\beta_M + \mu_{it} \tag{1}$$

$$D_{it}^* = X_{D,\,it}\,\beta_D + \nu_{it} \tag{2}$$

$X_{M,\,it}$ is a vector of variables that explain firm i's incentives to commit misconduct in year t, and $X_{D,\,it}$ is a vector of variables that explain firm i's likelihood of getting caught. μ_{it} and ν_{it} are zero-mean disturbances with a bivariate normal distribution.

We denote $M_{it} = 1$ if $M_{it}^* > 0$ and $M_{it} = 0$ otherwise. We denote $D_{it} = 1$ if $D_{it}^* > 0$, and $D_{it} = 0$ otherwise. We do not directly observe the realizations of M_{it} and D_{it}. However, we can observe the following: $\mathrm{Z}_{it} = M_{it} \times D_{it}$ where $\mathrm{Z}_{it} = 1$ if bank i engages in misconduct and this is detected, and $\mathrm{Z}_{it} = 0$ if bank i does not commit wrongdoing or commits wrongdoing but this has not been detected.

Let Φ denote the bivariate standard normal cumulative distribution function. ρ is the correlation between μ_{it} and ν_{it} from (1) and (2). Then:

$$P(Z_{it} = 1) = P(M_{it} D_{it} = 1) = P(M_{it} = 1, D_{it} = 1) = \Phi(X_{M,it}\beta_M, X_{D,it}\beta_D, \rho), \tag{3}$$

$$P(Z_{it} = 0) = P(M_{it} D_{it} = 0) = P(M_{it} = 0, D_{it} = 0) + P(M_{it} = 1, D_{it} = 0)$$

$$= 1 - \Phi(X_{M,it}\beta_M, X_{D,it}\beta_D, \rho) \tag{4}$$

Thus, the log likelihood for the model is:

$$L(\beta_M, \beta_D, \rho) = \Sigma \log(P(Z_{it} = 1)) + \Sigma \log(P(Z_{it} = 0)) \tag{5}$$

The bivariate model can be estimated using the maximum-likelihood method. According to Poirier (1980), an important feature of this approach is that $X_{M,it}$ and $X_{D,it}$ do not contain the same set of variables such that there is at least one vector that has one or more variables absent in the other vector (see also Wang (2013), Wang, Winton and Yu (2010)). We detail the variables included in both vectors in Section 2.4.b.

2.4 Variables

2.4.a. Board quality: monitoring and advising

Monitoring Quality. We capture board monitoring quality using the number of board members appointed before the current CEO takes office. We refer to such members as "non-captured" board members.[7] We define the variable as:

$$Monitoring\ Quality = \frac{\#\, non-captured\ board\ members}{Board\ size - 1} \tag{6}$$

The denominator is the total number of directors sitting on the board less the CEO as she always sits on the board in our sample. This variable ranges from 0 to 1, with higher values indicating a board that is not captured by the CEO and thus is more willing to independently monitor the CEO. The average *Monitoring Quality* in our sample is 0.54. Thus, in our sample, half of the board is not captured by the CEO. We use BoardEx to construct *Monitoring Quality*. BoardEx provides biographic data of more than 60,000 unique directors serving at over 70,000 private, public and not-for-profit companies.

For robustness, we also construct the alternative measure *Residual Monitoring Quality*, which is defined as the residual from a regression of *Monitoring Quality* on CEO tenure. This variable will remove the positive correlation between *CEO tenure* and *Monitoring Quality.* Thus, it isolates the board monitoring effect from the effect of CEO tenure.

[7] To construct this variable, we compare the start of the employment date of the board member and date the CEO takes office. When the CEO leaves and then gets re-appointed, we do not reset tenure to zero but add on the pre-departure tenure.

Advising Quality. We use the number of directors to whom existing board members of a given bank are connected to proxy for the ability of the board to advise the CEO. Following Coles, Daniel and Naveen (2012), we define the variable as:

$$Advising\ Quality = \frac{\#\,directors\ to\ whom\ board\ members\ are\ connected}{Board\ size} \tag{7}$$

For each board member of a given bank, we count the number of directors in other firms that this member is connected to by serving as co-directors. We then sum across all board members of this bank and then divide this sum by the size of the board to obtain *Advising Quality*. The average *Advising Quality* in our sample is 1.81. The correlation between *Monitoring Quality* and *Advising Quality* is 0.01 confirming that the two are distinct measures that proxy for different board functions.[8]

[8] However, one could still argue that *Advising Quality* captures other aspects of board monitoring that are unrelated to *Monitoring Quality*. To completely rule out this possibility, we examine the effects of *Advising Quality* on CEO turnover and CEO compensation policies, which are part of a board's monitoring activities. We find that *Advising Quality* does not have any measurable effect on (i) CEO turnover-performance sensitivity, (ii) the level of CEO pay, (iii) the level of CEO pay relative to other top executives at the same bank (the CEO pay slice), and (iv) the value of CEO risk-taking incentives. This confirms our argument that *Advising Quality* is not associated with the monitoring of the CEO. In contrast, consistent with Coles, Daniel, and Naveen (2014), we find that *Monitoring Quality* is significantly related to CEO turnover-performance sensitivity and various CEO compensation policies. The results are available upon request.

2.4.b. Control variables

Estimating the bivariate model requires two sets of control variables, one set designed to explain the commission of misconduct and the other for detection of misconduct. The variables are chosen based on the existing theoretical and empirical work in the corporate fraud literature (Khanna, Kim, and Lu, 2014; Wang, 2013; Wang, Winton, and Yu, 2010).

Commission of misconduct regressions

Our baseline regression for the commission of unobserved misconduct regression is as follows:

$$M_{it}^{*} = \mathbf{X}_{M,\, it}\,\beta_M + \mathbf{X}_{MD,\, it}\,\gamma_{\mathrm{M}} + \mu_{it} \qquad (8)$$

$\mathbf{X}_{M,\, it}$ contains a set of variables that previous studies have shown to influence a bank's incentives to commit wrongdoing but not the likelihood that regulators detect the wrongdoing. $\mathbf{X}_{MD,\, it}$ contains a set of factors that affect the bank's incentives to commit wrongdoing and also the likelihood of detection.

$\mathbf{X}_{M,\, it}$ includes the bank's profitability, leverage and investor beliefs about industry prospects. CEOs of poorly performing or financially distressed banks could be more likely to commit wrongdoing to inflate earnings. We control for bank profitability using the ratio of earnings before interest and tax divided by total assets (*ROA*) and leverage using the ratio of total liabilities to total assets. In addition, Wang, Winton, and Yu (2010) show that misconduct is related to investor beliefs about industry prospects and find a non-linear relation with industry charter value. Hence, we include *Industry charter value* and *(Industry charter value)*^{2} in the misconduct commission equation. Industry charter value is measured as the median charter value in a given year.

$\mathbf{X}_{MD,\, it}$ contains other bank-level measures such as size, risk, growth prospects, board-level monitoring proxies and CEO characteristics. We control for bank size using the natural logarithm of the book value of total assets. Furthermore, Povel, Singh, and Winton (2007) argue that CEOs of high-growth firms that exhibit a downturn are more likely to commit wrongdoing. Thus, we control for the bank's charter value using the ratio of market value of equity divided by the book value of equity (*Charter value*) and the percentage of change in bank assets over the prior year (*Asset growth*). The corporate fraud literature also suggests that a firm's risk could be related to a firm's tendency to commit wrongdoing. Thus, we control for a bank's portfolio risk using the ratio of risk-weighted assets to total assets.

Board characteristics: We control for various board monitoring proxies, such as the number of directors on the board (*Board size*) and the fraction of independent directors (*Board independence)*. We also include the ratio of independent directors with prior experience as a CFO or a finance director (*Board financial expertise*). The monitoring role by independent directors has been widely documented in the fraud literature (e.g. Beasley, 1996). Furthermore, directors with relevant expertise could offer timely advice to the CEO and could therefore play an important advising role (Agrawal and Chadha, 2005).

CEO characteristics: Our controls for CEO characteristics include the number of years the CEO has served in this position (*CEO tenure*) and whether the CEO also chairs the board (*CEO is chair*). We control for CEO tenure throughout the paper to demonstrate that the results based on our measure of monitoring quality are not driven by CEO tenure. We control for *CEO is chair* as CEOs who chair the board may block the information flow to board members and hence reduce the quality of board oversight (Fama and Jensen, 1983).

CEO pay: A number of papers link fraud to the compensation of executives (e.g. Johnson, Ryan, and Tian, 2009). CEOs may be incentivized to commit wrongdoing to manipulate short-term performance to enjoy higher payouts. We control for the bonus component of CEO pay, measured as CEO bonus divided by total compensation. We also control for the equity incentives embedded in CEO compensation. The sensitivity of CEO wealth to bank risk (*vega*) measures the changes of CEO wealth to stock return volatility. If misconduct increases equity risk, this means that CEOs with higher *vega* will have an incentive to engage in riskier projects, including those involving wrongdoing. By contrast, the sensitivity of CEO wealth to bank performance (*delta*) measures changes in CEO wealth to stock price performance. Because delta exposes a CEO's wealth also to falling stock prices, a higher *delta* might discourage CEOs from committing wrongdoing. Since CEOs will be interested in the relative impact of both *vega* and *delta* on their wealth before deciding to commit wrongdoing, we scale vega by delta (*CEO vega/delta*).[9]

Top executive characteristics: Bank wrongdoing could directly relate to a range of observable characteristics of top executives. We compute the fraction of top 5 executives with a degree from an Ivy League institution (% *Ivy League executives*), an MBA degree (% *MBA degree*), or military experience (% *Military executives*). Chidambaran, Kedia, and Prabhala (2012) show that CEOs attending an Ivy League university are less likely to commit fraud. Benmelech and Frydman (2014) argue that military-trained CEOs tend to have more

[9] We are grateful to Jeffery Coles, Naveen Daniel and Lalitha Naveen for sharing their data on CEO equity-based incentives online. Please refer to Coles, Daniel and Naveen (2006) and Core and Guay (2002) for detailed calculation of the variables.

conservative corporate policies and ethical principles. Hence, we infer from the findings that military-trained executives are less likely to commit wrongdoing.

Regulators: We control for the main regulator that supervises the bank. We include two dummies: *OCC* (equals 1 if the bank is overseen by the OCC) and *FRB* (equals 1 if the bank is overseen by the FRB).

<u>*Detection of misconduct regressions*</u>

$$D_{it}^{*} = \mathbf{X}_{MD,\,it}\,\delta_{D} + \mathbf{X}_{D,\,it}\,\beta_{D} + \nu_{it} \qquad (9)$$

As illustrated above, the vector $\mathbf{X}_{MD,\,it}$ contains variables that influence both misconduct commission and detection processes.

However, certain factors trigger the detection of misconduct while unrelated to the causes of banks committing misconduct. This is true for factors that cannot be anticipated by the CEO at the time when misconduct is committed. For example, a sudden drop in performance is difficult to predict for CEOs, but this performance drop may spark additional regulatory scrutiny of banks and thus contribute to misconduct being detected. We identify a vector $\mathbf{X}_{D,\,it}$ which includes variables that affect detection but are exogenous to a bank's *ex-ante* incentives to commit wrongdoing. Following Wang (2013), we include *Abnormal ROA, Adverse stock return, Abnormal return volatility* and *Abnormal stock turnover* in this vector.

[Table 2 around here]

To capture *Abnormal ROA* performance relative to recent past performance, we compute the residuals (ε_{it}) from the following model for each bank: $ROA_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 ROA_{it-2} + \varepsilon_{it}$. *Adverse stock return* is a dummy variable that equals 1 if the bank's stock return is in the bottom 10% of all the bank-year return observations in the CRSP database. Finally, the bank's stock return volatility and stock turnover could also trigger detection by regulators. We measure *Abnormal return volatility* as the demeaned standard deviation of daily stock returns in a given year and *Abnormal stock turnover* as the demeaned daily stock turnover in a given year. Table 2 provides summary statistics for the variables that we use in our analysis.

3. Bank boards and bank misconduct

3.1 Main results

Table 3 reports our bivariate probit estimation regression results. Odd-numbered columns report prediction results for banks committing misconduct [P(M=1)]; even-numbered columns show the prediction results for banks that were detected to have committed misconduct, conditional upon misconduct having been committed [P(D=1|M=1)].

[Table 3 around here]

The coefficients of our key variables of interest, *Monitoring Quality* and *Advising Quality*, are statistically significant. Effective board monitoring and advising are associated with fewer cases of committed misconduct and more cases of detected misconduct. The results are economically significant. The estimated coefficient of *Monitoring Quality* suggests that a bank with all directors appointed before the CEO assumes office (*Monitoring Quality* = 1) has a 23% lower probability of wrongdoing commission and a 34% higher probability of detection than a bank with no director appointed before the CEO assumes office (*Monitoring Quality* = 0). A one-standard-deviation increase in *Advising Quality* is associated with 7% lower probability of wrongdoing and 11% higher probability of detection.

The control variables have the expected signs. Most interestingly, board independence does not enter significantly. This indicates that the current standard for director independence, which mostly focuses on the absence of economic ties between directors and a firm, fails to pick up unobserved aspects of boardroom governance. Further, powerful CEOs, as proxied by CEO is chair, are less likely to be detected and are associated with a higher probability of committing misconduct.

The variables excluded from the detection equation but included in the commission equation (*Abnormal ROA*, *Adverse stock return* and *Abnormal stock volatility*) show the expected signs and are statistically significant. An F-test of joint significance of *Abnormal ROA*, *Adverse stock return*, *Abnormal stock volatility* and *Abnormal stock turnover* (F-stats = 39.11; Prob > Chi^2 = 0.000) indicates that they are jointly significant. Likewise, the variables excluded from the commission equation are also individually and jointly significant.

Section 6 presents numerous robustness tests which show that our results are robust to us using a standard probit regression, the pre-2008 period only, board monitoring and advising by independent directors only, as well as various alternative tests.

3.2 CEO characteristics and bank misconduct

An alternative explanation for the results we report above could be that CEOs with certain characteristics, such as greater talent or industry experience, may be more attracted to work for more connected boards. Thus, the lower misconduct likelihood associated with effective board advising could be due to CEO characteristics rather than board advising. This section shows that our main results remain robust to the inclusion of variables that measure CEO pay, shareholder ownership, education and early-life experience.

[Table 4 around here]

The first two columns of Table 4 report the estimates between CEO pay and misconduct commission and detection, respectively. We find that *CEO Bonus/total compensation* and *CEO vega/delta* are positively related to the probability that misconduct is committed. The positive link between CEO bonus payment and wrongdoing is consistent with our argument that CEOs commit wrongdoing in order to boost stock prices and enjoy higher payouts.

Columns (3) and (4) control for the personal characteristics of top executives. Interestingly, while we find that executives attending elite universities (*% Ivy League Executives*) are less likely to commit wrongdoing, those with an MBA degree are more likely to commit wrongdoing. Executives with military training have no effect on wrongdoing. Regarding our MBA-related finding, McCabe, Butterfield, and Trevino (2006) show that self-reported cheating is generally higher in MBA programs than in other graduate programs. Since individuals who cheat at school also tend to cheat in the workplace (Nonis and Swift, 2001), MBA-educated executives might be more likely to commit wrongdoing than their non-MBA peers.

3.3 Results for different classes of enforcement actions

While we find that effective boards reduce wrongdoing, it is unclear whether this reduction effect holds for different types of misconduct. Panel A of Table 5 shows that *Advising Quality* only reduces type 1 misconduct (that is, violations of financial soundness) and has no measurable effect on type 2 misconduct. This helps validate our identification that our measure of board advising is different from board monitoring. Thus, consistent with previous literature (Coles, Daniel, and Naveen, 2012; Field, Lowry, and Mkrtchyan, 2013), our results indicate that board advising matters more when the demand for director advice is high. On the other hand, *Monitoring Quality* matters to both types of misconduct.

[Table 5 around here]

We show that board advising matters most to misconduct of a technical nature. We take the analysis further by narrowing down the definition of the *Advising Quality* proxy and re-estimate this relation. Our baseline definition of *Advising Quality* is the number of directors to whom the directors on the board are collectively connected, scaled by the size of the board. This assumes that every director has equal knowledge regardless of the industry in which the director is working. However, it is possible that a director serving on the board of a firm in an industry related to banking has better access to information and will be in a better position to offer relevant advice to the CEO. Furthermore, the director is likely to encounter similar technical issues confronting the board, such as setting the level of capital requirements. Hence, we construct a new measure of board advising: *Industry Connections*. This is defined as the connections that arise only from serving on boards in the following industries: insurance, investment companies, life assurance and private equity.[10] Our second measure of advising is *Large Firm Connections*, which is based on the connections arising from serving on boards of large firms, where large means total assets above the sample median. Directors who serve on the board of a large firm have to deal with a wide range of issues facing the board and therefore could be able to offer better advice to the CEO (Coles, Daniel, and Naveen, 2012).

Panel B reports the estimated relations between alternative proxies of board advising and type 1 misconduct. For comparison purposes, Columns (1) and (2) report our baseline results

[10] BoardEx has a variable called "Sector" which classifies firms into different industry sectors. The analysis shown in this test relies on the BoardEx definition of industry sector.

using the original definition of *Advising Quality* while Columns (3) and (4) report the results using *Industry Connections* and (5) and (6) report *Large Firm Connections*. All coefficients are statistically significant. Most interestingly, Columns (1) and (3) reveal that the magnitude of *Industry Connections* is twice as large as that of our baseline measure (the difference is statistically significant). The results indicate that directors whose connections arise from firms in a related industry are able to offer high-quality advice to the CEO, providing further support to our hypothesis that board advising matters to misconduct.

Overall, our findings demonstrate that boards with higher advising capacity could assist the CEO in making more accurate and better-informed decisions, thereby decreasing instances of wrongdoing.

3.4 Endogeneity of board measures

Identifying causality between our two board measures and bank misconduct poses some challenges. In particular, banks of a certain board composition could either attract or select CEOs who are more likely to commit misconduct. It is possible, for instance, that CEOs intent on committing misconduct choose to work for banks with ineffective boards. Further, while we control for a range of board and CEO characteristics, it is still possible that unobservable firm characteristics affect both director selection and the occurrence of misconduct at the same time. For instance, a bank's corporate culture may be such that it makes misconduct more likely and may also attract a certain type of CEO who is more likely to engage in misconduct.

To circumvent these endogeneity concerns, we exploit the role of the local labor market in supplying directors to a bank. Specifically, we construct two instrumental variables (IVs) that are related to *Monitoring Quality* and *Advising Quality* but are not related to misconduct. The first instrument is the distance from a bank's headquarters to the nearest airport (*Ln(Distance Airport)*). Geographic coordinates are obtained from the US Census file. The second instrument is the population of the county of the bank's headquarters (*Ln(Population)*). County information is obtained through COMPUSTAT and the population information comes from the US Census Bureau.

Both instruments are related to *Monitoring Quality* because they both affect the rate of director turnover. Arguably, directors are likely to eschew remotely located banks, that is, banks headquartered further away from an airport, in favor of more conveniently located banks. We would therefore expect higher director turnover in remote bank locations as directors leave these banks for more conveniently located institutions. Higher director turnover results in more director appointments and thus in lower *Monitoring Quality* at remotely located banks. Equally, both instruments affect *Advising Quality* because banks in locations with better access to an airport and banks located in more populous areas should have access to a larger labor market. Since the supply of qualified directors is limited and their recruitment is time-consuming (Knyazeva, Knyazeva, and Masulis, 2013), more convenient bank locations will make it more likely that banks are able to recruit qualified directors with high advising capabilities. *Advising Quality* should thus be higher for more conveniently located banks. Importantly, neither the distance to the next airport nor the population of the county of a bank's headquarters should be related to bank misconduct other than through the effect these instruments have on board composition.

[Table 6 around here]

The first-stage estimation results are reported in Table 6, Columns (1), (2), (5) and (6). Specifications (1) and (5) are for the commission equation while specifications (2) and (6) are for the detection equation. We run two first-stage regressions for *Monitoring Quality* and *Advising Quality*. As expected, *Monitoring Quality* decreases with the distance from a bank's headquarters to the nearest airport and *Advising Quality* increases with the county's population.

The second-stage regression results are reported in specifications (3), (4), (7) and (8). The coefficients on our IV estimates are statistically significant and larger than those of OLS estimates. A potential explanation for this difference is that not accounting for endogeneity would bias the coefficients of *Monitoring Quality* and *Advising Quality* in OLS toward zero (Theil, 1971). This problem can be mitigated by the instrumental variable approach. Overall, we interpret these results as showing that our measures of board quality are causally related to misconduct in banking.

4. How do boards reduce enforcement actions?

In this section, we explore two specific channels through which boards can reduce bank misconduct cases. We examine whether boards that are more effective monitors and advisors could be associated with (i) lower bank risk or (ii) improved managerial discipline.

4.1 Reduction in bank risk

Many type 1 cases of misconduct are issued when bank fundamentals indicate increased risk. Thus, effective boards could reduce type 1 misconduct by reducing a bank's risk measures. We analyze three risk indicators: Tier-1 capital, portfolio risk and the fraction of non-performing loans. Tier-1 capital is a core measure of a bank's financial strength from a regulatory point of view. Commercial banks exert discretion over the level of capital as long as it is above the minimum capital. In addition, we also examine portfolio risk and the fraction of non-performing loans as both are important causes of enforcement actions. Table 7 reports the relation between *Monitoring Quality* and *Advising Quality* and measures of risk.

[Table 7 around here]

After controlling for bank and other board characteristics, both *Monitoring Quality* and *Advising Quality* are positively related to Tier-1 capital. A one-standard-deviation increase in the percentage of non-captured board members and connected board members is associated with a 22-basis-point and an 11-basis-point improvement in the bank's Tier-1 capital, respectively. In addition, we find a negative relation between *Monitoring Quality* and the bank's portfolio risk (as measured by the proportion of risk-weighted assets on a bank's balance sheet) and the fraction of non-performing loans. Overall, the results in Table 7 indicate that both board monitoring and board advising are associated with safer banks and, hence, reduce type 1 misconduct.

4.2 Managerial discipline

CEOs are likely to consider the personal costs of committing wrongdoing before they engage in it (Khanna, Kim, and Lu, 2014). There are several ways in which the CEOs could be disciplined following the detection of misconduct. CEOs may lose their reputation and their job, and in some cases may face criminal charges (Karpoff, Lee, and Martin, 2008). Among these possible consequences, some are determined by the courts, some by the labor market and some by the board.

One of the key monitoring functions of the board is to evaluate and discipline the CEO (Mace, 1971). We would expect that boards that are not captured by the CEO will impose heavier penalties on the CEO if wrongdoing is detected. We consider four ways in which boards could discipline CEOs: (1) dismissal, (2) reductions in pay, (3) reductions in pay relative to other top executives, and (4) reductions in contractual risk-taking incentives (*CEO vega*)[11]. These variables are measured one year after the enforcement action takes place.

[Table 8 around here]

Table 8 reports the regressions of our board measures on measures of CEO discipline. $Misconduct_{t\text{-}1}$ is equal to 1 if wrongdoing is detected during the previous year. *Misconduct* relates detected wrongdoing to the CEO's penalties via an interaction with *Monitoring Quality*. Therefore, the coefficient of the interaction term measures the penalties the CEO has to bear after wrongdoing is detected and when board monitoring is high.

Panel A of Table 8 displays our key estimation results. Odd-numbered columns omit the interaction terms while even-numbered columns display the full set of variables. As shown in the odd-numbered columns, *Misconduct* is not significant in any specification. On average, a regulatory enforcement action does not lead to CEOs being disciplined. However, the interaction term between *Misconduct* and *Monitoring Quality* indicates that following misconduct under higher board monitoring quality, CEOs are disciplined in the following ways: CEOs receive (i) a larger pay cut, (ii) a reduced pay slice relative to other top executives at the same bank and (iii) lower contractual risk-taking incentives (*CEO vega*). It is interesting to note that our results on pay slice show that the reduction in CEO pay following misconduct is not due to executive pay having been reduced for all executives, but that CEO pay has been reduced relative to other

[11] We are only interested in CEO *vega* but not CEO *delta* because *vega* gives the CEO a clear incentive to commit wrongdoing while *delta* has an ambiguous effect on wrongdoing. Thus, boards would be interested in modifying the *vega* component following wrongdoing discovery.

executives. Evidently, boards view the CEO as the key person holding responsibility for misconduct and therefore reduce the CEO salary relative to the salaries of other executives.

Panel B of Table 8 displays the results of tests which interact *Misconduct* with *Advising Quality*. *Advising Quality* should not have an effect on how CEOs get disciplined following misconduct. Consistent with this, none of the interaction terms enter the regression significantly. This validates our interpretation of *Advising Quality* capturing the ability of the board to give advice rather than to monitor the CEO.

Our results have two key implications. First, non-captured directors discipline the CEO after wrongdoing is detected, thus increasing the CEO's costs of wrongdoing. This could act as an ex-ante deterrent to the CEO to engage in wrongdoing and could explain why our earlier analysis shows that effective board monitoring reduces the probability that banks engage in misconduct. Second, in the absence of a board that engages in effective monitoring, regulatory enforcement actions have little impact on CEOs being disciplined. These results add novel insights to the CEO's disciplinary mechanisms in the banking sector (Schaeck et al. 2012). In banks, not only shareholders but regulators are also involved in monitoring and therefore play a role in the CEO's disciplinary process. Consistent with this, our results indicate that regulatory action alone does not discipline bank CEOs, but a combination of the two – effective board monitoring and enforcement action – can create the desired effects.

5. Does better board quality alleviate shareholder wealth losses?

In the previous sections, we show how effective boards reduce the likelihood of bank misconduct. We now test whether effective boards also reduce the severity of misconduct.

Consistent with the prior literature, we capture the severity of misconduct using the abnormal stock price reaction to the announcement of misconduct (e.g., Cumming, Leung, and Rui, 2014).

We expect to find a positive relationship between the announcement returns and measures of board monitoring and advising. Since high-quality boards are more effective at preventing misconduct, detected cases of misconduct are likely to be less severe. Assuming that the wrongdoing that is detected in *t* is likely to have been committed in *t*-1,[12] we expect lagged board variables to be linked with higher announcement returns. Further, effective boards are more likely to take corrective action, such as to discipline the CEO and to "fix" the bank after wrongdoing has been detected. Thus, investors may be more positive about misconduct when the current board exhibits high monitoring or advising quality. Thus, we also include contemporaneous measures of monitoring and advising in our analysis.

[Table 9 around here]

We use event study methodology to test these hypotheses. To find the announcement date, we search newspapers using the Factiva database and define the event day as the earliest trading day when the news of the enforcement action is made public. We drop several observations where there are missing stock returns or when other major corporate news is released on the same day. This yields a sample of 206 announcements. We then estimate a market model using a value-weighted CRSP index as a market index for between 46 and 146 days before the announcement of an enforcement action. We construct cumulative abnormal returns (CARs) as the sum of the prediction errors of the market model.

[12] Our results are robust to alternative time gaps between the commission and detection of misconduct. We find qualitatively identical results if the gap is two or three years.

The average CARs over a three-day [-1, +1] event window is -3.50%, (significant difference at the 1% level). This shows that regulatory enforcement actions hurt shareholder wealth. The dependent variables are CARs of three-day window [-1, +1]. Table 9 displays our regression results. Columns (1) and (2) show that the announcement returns are positively related to measures of *Monitoring Quality* when wrongdoing is committed (*t*-1) as well as when it is detected (*t*). The coefficients are also economically significant. CARs are on average 7% higher when the board has all directors appointed before the CEO's tenure than when none are appointed before the current CEO's tenure. Thus, effective board monitoring reduces the severity of the misconduct. Further, investors expect an effective board to take action to help the bank recover from the misconduct as shown by a significant coefficient on contemporaneous measures of *Monitoring Quality*. This lends support to our prior finding that following enforcement action, a board with effective monitoring capability will discipline the CEO. Finally, Columns (3) and (4) show that *Advising Quality* does not enter the regression significantly.

6. Online appendix: Robustness tests on the relation between board effectiveness and bank misconduct

In this section, we test the robustness of our key results using alternative definitions of our board measures.

6.1 Is Monitoring Quality driven by CEO tenure?

Monitoring Quality correlates with CEO tenure as longer-tenured CEOs will have been able to appoint a larger fraction of directors. Thus, our measure of monitoring quality may capture the effects associated with long CEO tenure instead of effective board monitoring. We show that our results are not affected by CEO tenure as follows.

[Table A1 around here]

First, we control for CEO tenure in all specifications in the analysis above. Second, we compute *Residual Monitoring Quality* as the residual from a regression of *Monitoring Quality* on CEO tenure. This variable is free of any positive correlation between CEO tenure and *Monitoring Quality*. As indicated in Table A1, our results are robust using our modified measure of *Monitoring Quality* that strips out the effect of tenure.

6.2 Is Monitoring Quality driven by director experience?

Another possibility is that our *Monitoring Quality* correlates with director tenure, and thus reflects the experience of directors. Directors who are not captured by the CEO tend to have longer board tenure. We use two different approaches to deal with this concern.

[Table A2 around here]

First, we control for average board tenure in all specifications. Second, as with CEO tenure, we estimate the residual from a regression of *Monitoring Quality* on average board tenure. Our results are robust to using this modified measure of monitoring as indicated in Table A2.

6.3 Is Advising Quality different from "Board busyness"?

Fich and Shivdasani (2006) define a board to be "busy" if more than half of the outside directors on a board hold three or more directorships. While a board does not need to be "busy" to have high *Advising Quality*, we could expect a positive correlation between these two measures. Thus, *Advising Quality* may capture the effects of a busy board instead of effective advising quality. We define *Board busyness* similar to Fich and Shivdasani (2006) and perform two tests to show that the effects we obtain for *Advising Quality* are not driven by *Board busyness*.

[Table A3 around here]

Table A3 shows no evidence that Board busyness explains bank misconduct. First, we include both *Advising Quality* and *Board busyness* in the bivariate probit model. The coefficients of *Board busyness* are insignificant in both the commission and detection equations while the coefficients of *Advising Quality* remain significant. Second, we repeat the analysis by including only *Board busyness* but not *Advising Quality*. Again, none of the coefficients are significant.

6.4 Using a standard probit model

[Table A4 around here]

Our paper uses the bivariate probit model to show that effective boards reduce the probability of the CEO committing misconduct conditional upon detection of misconduct. For robustness, we also show the results of a simple standard probit model to examine the relationship between effective boards and the likelihood of a bank receiving an enforcement action in Table A4. *Monitoring Quality* and *Advising Quality* enter negatively and are statistically significant indicating that monitoring and advising are associated with fewer enforcement actions.

6.5 Alternative bivariate probit model specification

[Table A5 around here]

In our baseline model, we have some excluded instruments in both the commission and detection equations. Some studies that use the bivariate model to study fraud have excluded instruments in one equation, say, fraud detection equation, but not the other (e.g., Khanna, Kim, and Lu, 2014). To test if our bivariate model is sensitive to the model specification, we remove *ROA*, *Leverage* and *Industry charter value* from the fraud commission equation. The results are in Table A5.

6.6 Are our results driven by the post-2007 period?

[Table A6 around here]

Table 1 shows a surge in the number of enforcement actions issued after the 2007 financial crisis. This raises concerns that our results could be driven by the 2008 financial crisis. To address this concern, we split the sample into two groups: before and after the crisis. As shown in Table A6, our results are not driven by the crisis.

6.7 Independent directors

Our definitions of *Monitoring Quality* and *Advising Quality* do not differentiate between directors who are independent and executives who sit on the board. One may argue that our results could be mostly driven by executives on the board who should feel most beholden to the CEO. To address this concern, we limit our analysis to independent directors and calculate the fraction of independent directors who are appointed before the CEO's tenure (*Monitoring Quality of Independent Directors*) and the connections of independent directors (*Advising Quality of Independent Directors*).

[Table A7 around here]

As displayed in Table A7, we find that all results obtained using independent directors are similar to those using all board members. This implies that independent directors can also be susceptible to monitoring quality and advising quality. Monitoring and advising quality among independent directors affects the likelihood of misconduct being committed and detected in the same way as for the complete board. An implication of this finding is that the share of independent directors that has been extensively studied in the literature as a key monitoring device does not sufficiently capture a board's monitoring ability.

7. Conclusions

Trust in the banking sector is vital to the functioning of the financial system and for economic activity. Misconduct in banking undermines the general public's confidence in the safety and soundness of the banking sector. Thus, studying the determinants of bank misconduct is an important topic of potentially wide implications.

In this study, we focus on two key functions of bank boards, monitoring and advising, and find that both functions are effective in reducing the probability that banks receive enforcement actions from regulators. Further analyses reveal that while board monitoring reduces all categories of misconduct, board advising reduces misconduct of a more technical nature. The results are economically meaningful and robust to two-stage instrumental variable analysis. Overall, we identify three channels through which effective boards deter misconduct: effective boards increase the likelihood that misconduct is detected, they reduce bank risk and they increase the penalties imposed on the CEO following the discovery of misconduct. Furthermore, effective boards also mitigate the severity of misconduct.

Our study has important implications for policy makers. The Office of the Comptroller of the Currency (2014) in its recent regulatory guidelines establishes 'heightened expectations' of the role of bank boards in shaping a bank's risk culture and in reducing misconduct cases. These views are echoed by the Financial Stability Board (2014) which places bank boards at the core of effective risk management and emphasizes their responsibility in monitoring and providing ‘sage advice’ (pg. 5) to senior management. The findings we report in this paper confirm that boards play an important role in the risk management of banks and that the ‘heightened expectations’ of boards in preventing misconduct are justified.

Finally, our paper offers novel insights on how to structure bank boards to prevent misconduct. First, our study shows that in addition to monitoring, directors also give advice to the CEO and this plays an important role in preventing misconduct. Thus, the advisory function of boards deserves more attention as part of the governance process. Second, we show that conventional board measures such as board independence and financial expertise have no measurable effect on bank misconduct being committed or detected. By contrast, the board metrics we study in this paper related to monitoring and advising are important predictors of misconduct. Overall, our article shows that board governance matters in banking. Our findings show that governance metrics revolving around CEO connections warrant more attention from regulators, investors and governance activists.

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Table 1: Time distribution of banks receiving enforcement actions

Year	All enforcement actions	Type 1 (Financial safety and soundness)	Type 2 (Internal organizational practices)
2000	5	1	4
2001	5	1	4
2002	3	0	3
2003	7	4	3
2004	12	4	8
2005	5	2	3
2006	6	1	5
2007	2	0	2
2008	10	6	4
2009	48	37	11
2010	59	44	15
2011	39	30	9
2012	28	12	16
2013	15	5	10
TOTAL	**244**	**147**	**97**

Table 2: Descriptive statistics

Definitions of all variables are included in Appendix 1. For each variable, the p-value of the difference between banks with misconduct and without misconduct are calculated. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

							Misconduct?	
	N	**Mean**	**Median**	**Std.**	**p.1**	**p.99**	**Yes**	**No**
Key governance measures								
Monitoring Quality	4072	0.544	0.545	0.314	0.000	1.000	0.462	0.548***
Advising Quality	4072	1.815	0.000	3.802	0.000	18.263	1.788	2.338**
Bank-specific characteristics								
ROA (%)	4072	0.580	0.857	1.278	-5.226	2.197	-0.572	0.639***
Leverage	4072	0.906	0.909	0.029	0.815	0.966	0.918	0.905***
Industry charter value	4072	1.503	1.312	0.613	0.787	2.591	1.169	1.169***
Ln(Assets)	4072	21.692	21.328	1.699	19.090	27.298	22.067	21.673***
Asset growth	4072	0.102	0.066	0.190	-0.172	0.789	0.037	0.106***
Charter value	4072	1.503	1.384	0.924	0.139	4.366	1.070	1.526***
Portfolio risk	4072	0.728	0.739	0.142	0.314	1.023	0.740	0.727
Loans	4072	0.666	0.685	0.143	0.135	0.904	0.673	0.666
Non-performing loans	4072	0.002	0.000	0.008	0.000	0.036	0.005	0.002***
Tier-1 capital	4072	0.089	0.086	0.023	0.041	0.161	0.081	0.089
Bank complexity	4072	1.500	2.000	0.903	0.000	3.000	1.636	1.493**
Corporate governance measures								
Board size	4072	11.598	11.000	3.528	6.000	23.000	11.035	11.626**
Board independence	4072	0.765	0.800	0.138	0.364	0.933	0.772	0.765
Board financial expertise	4072	0.040	0.000	0.077	0.000	0.333	0.050	0.040*
Institutional ownership	1196	0.243	0.239	0.122	0.017	0.552	0.247	0.242
CEO characteristics and incentives								
CEO tenure	4072	1.916	1.988	0.793	0.095	3.395	2.053	1.909**
CEO is chair	4072	0.490	0.000	0.500	0.000	1.000	0.485	0.490
CEO ownership	1273	0.028	0.008	0.069	0.000	0.434	0.050	0.027***
Ln(CEO total pay)	1273	7.740	7.585	1.151	5.757	10.593	7.954	7.725*
CEO bonus/total compensation	1273	0.130	0.035	0.166	0.000	0.623	0.122	0.131
CEO vega	887	221.473	53.111	412.213	0.000	1908.120	239.649	220.281
CEO vega/delta	887	0.389	0.286	0.286	0.000	1.623	0.503	0.381**
CEO pay slice	1196	0.376	0.364	0.109	0.124	0.742	0.376	0.376
CEO dismissal	4072	0.091	0.000	0.288	0.000	1.000	0.111	0.090
Top-5 characteristics								
% Ivy League executives	1196	0.125	0.000	0.185	0.000	0.600	0.135	0.125
% MBA executives	1196	0.294	0.200	0.256	0.000	1.000	0.329	0.292
% Military executives	1196	0.058	0.000	0.120	0.000	0.600	0.044	0.059
Detection of misconduct								
Abnormal ROA	3018	0.000	0.217	1.164	-4.864	2.302	-0.960	0.055***
Adverse stock return	3018	0.045	0.000	0.207	0.000	1.000	0.197	0.037***
Abnormal stock volatility	3018	0.000	-0.009	0.063	-0.124	0.219	0.043	-0.002***
Abnormal stock turnover	3018	0.000	-0.024	0.740	-1.765	2.484	0.282	-0.014***
Instrumental variables								
Ln(Distance airport)	4072	2.539	2.485	0.778	0.531	4.329	2.480	2.418
Ln(Population)	4072	0.771	1.000	0.420	0.000	1.000	0.798	0.769

Table 3: Bivariate probit model estimation for board effectiveness and bank misconduct

Columns (1) and (3) report the estimated relations between *Monitoring Quality* and *Advising Quality* and the commission of misconduct (M=1), and Columns (2) and (4) report the relations between *Monitoring Quality* and *Advising Quality* and detection, given misconduct (D=1|M=1). Standard errors are clustered at the bank level. The sample covers the period 1999–2012. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

	P(M=1)	**P(D=1|M=1)**	**P(M=1)**	**P(D=1|M=1)**
	(1)	**(2)**	**(3)**	**(4)**
Monitoring Quality	-0.916***	1.772**		
	(-2.710)	(2.064)		
Advising Quality			-0.056**	0.203***
			(-1.964)	(3.366)
ROA	0.002		0.080	
	(0.038)		(1.261)	
Leverage	8.115***		8.398**	
	(2.648)		(2.552)	
Industry charter value	-5.054***		-5.604***	
	(-3.501)		(-3.085)	
(Industry charter value)^2	1.605***		1.779***	
	(3.324)		(3.043)	
Ln(Assets)	-0.043	0.664***	0.083	0.139
	(-0.690)	(3.448)	(1.119)	(1.189)
Asset growth	-0.141	-2.730**	-0.490	-1.712
	(-0.217)	(-2.018)	(-0.772)	(-1.323)
Charter value	-0.223**	0.208	-0.216*	0.245
	(-2.147)	(0.998)	(-1.858)	(1.338)
Portfolio risk	0.528	2.106	-0.896	4.597***
	(0.801)	(1.223)	(-1.152)	(2.690)
Loans	-1.077	2.688	1.279	-2.584
	(-1.306)	(1.448)	(1.430)	(-1.445)
Non-performing loans	9.871	-24.384*	22.204*	-30.632*
	(0.913)	(-1.783)	(1.790)	(-1.744)
Tier-1 capital	-0.267	3.100	-5.608	11.461
	(-0.070)	(0.358)	(-1.326)	(1.314)
Board size	0.015	-0.141**	-0.012	-0.038
	(0.575)	(-2.393)	(-0.358)	(-0.745)
Board independence	0.274	-0.762	-0.301	0.529
	(0.417)	(-0.482)	(-0.417)	(0.473)
Board financial expertise	0.467	-2.096	0.554	-1.570
	(0.663)	(-1.358)	(0.659)	(-1.321)
CEO tenure	0.006	0.011	0.038***	-0.026
	(0.373)	(0.417)	(2.923)	(-0.935)
CEO is chair	0.443**	-1.351***	0.403*	-0.774**
	(2.514)	(-2.593)	(1.935)	(-2.162)
Abnormal ROA		-0.544***		-0.545***
		(-2.877)		(-3.717)
Adverse stock return		1.129		1.163**
		(1.451)		(2.332)
Abnormal stock volatility		3.653*		2.935*
		(1.830)		(1.849)
Abnormal stock turnover		-0.127		0.037
		(-0.623)		(0.232)
Observations	3004	3004	3004	3004
Prob>Chi^2	0.000	0.000	0.000	0.000
Log likelihood	-504	-504	-500	-500

Table 4: Board effectiveness and bank misconduct: CEO characteristics

Columns (1) and (3) report the estimated relations between CEO characteristics and the commission of misconduct (M=1), and Columns (2) and (4) report the relations between CEO characteristics and detection, given misconduct (D=1|M=1). *Monitoring Quality* and *Advising Quality* and detection, given misconduct (D=1|M=1). Standard errors are clustered at the bank level. The sample covers the period 1999–2012. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

	P(M=1)	**P(D=1|M=1)**	**P(M=1)**	**P(D=1|M=1)**
	(1)	**(2)**	**(3)**	**(4)**
Monitoring Quality	-3.045***	8.524***	-7.012***	1.140**
	(-4.947)	(3.266)	(-3.120)	(2.326)
Advising Quality	-0.237***	1.037***	-0.430***	0.102***
	(-5.485)	(3.990)	(-3.003)	(3.149)
CEO vega/delta	0.960***	0.625		
	(4.478)	(0.977)		
CEO bonus/total compensation	3.053***	-3.512		
	(4.027)	(-1.393)		
CEO ownership	1.042	18.230***		
	(0.852)	(3.974)		
% Ivy League executives			-3.301***	0.440
			(-3.356)	(0.828)
% MBA executives			1.790***	0.141
			(3.689)	(0.379)
% Military executives			1.644	-0.051
			(1.095)	(-0.075)
Other controls	Yes	Yes	Yes	Yes
Observations	722	722	945	945
Log likelihood	-122	-122	-171	-171
Prob > Chi^2	0.000	0.000	0.000	0.000

Table 5: Board effectiveness and bank misconduct: Interaction analyses

In both panels, odd-numbered columns report the estimated relations between *Monitoring Quality* and *Advising Quality* and the commission of misconduct (M=1), and even-numbered columns report the relations between *Monitoring Quality* and *Advising Quality* and detection, given misconduct (D=1|M=1). The sample covers the period 1999–2012. Panel A splits the enforcement actions sample into violations of financial safety and soundness (type 1) and internal organizational practices (type 2). Type **1** encompasses actions that are at the core of financial safety and soundness, including capital adequacy and liquidity, asset quality, provisions and reserves, large exposures and exposures to related parties. Type **2** comprises actions that are related to violations regarding the banks' internal organizational practices (e.g., internal control and audit systems, risk management systems and money laundering), breaches concerning the fitness and property of banks' board members and senior management and other heterogeneous wrongdoings. Panel B uses alternative proxies of board advising and the incidence of **type 1** misconduct. Columns (1) and (2) report our estimation using the baseline definition of *Advising Quality*, measured as the number of directors to whom directors on the board are collectively connected, scaled by board size. Columns (3) and (4) report our estimation using *Industry Connections*, which imposes the additional restriction that connected directors should sit on the board of financial services firms. Columns (5) and (6) report our estimation using *Large Firm Connections*, which includes the requirement that a connected director should sit on the board of large firms. Standard errors are clustered at the bank level. The sample covers the period 1999–2012. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Panel A: By types of regulatory enforcement actions

	P(M=1)	**P(D=1|M=1)**	**P(M=1)**	**P(D=1|M=1)**	**P(M=1)**	**P(D=1|M=1)**	**P(M=1)**	**P(D=1|M=1)**
	Type 1 (Safety and soundness)				**Type 2 (Internal practices)**			
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Monitoring Quality	-2.921***	0.505*			-0.517*	0.984**		
	(-5.528)	(1.741)			(-1.761)	(2.413)		
Advising Quality			-0.094***	0.127***			-0.084	0.076*
			(-2.979)	(2.856)			(-0.333)	(1.672)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3004	3004	3004	3004	3004	3004	3004	3004
Log likelihood	-309	-309	-308	-308	-262	-262	-261	-261
Prob > Chi^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Panel B: Alternative proxies of Advising Quality and Type 1 (Safety and soundness)

	P(M=1)	**P(D=1|M=1)**	**P(M=1)**	**P(D=1|M=1)**	**P(M=1)**	**P(D=1|M=1)**
	All connections		**Industry connections**		**Large firm connections**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Advising Quality	-0.094***	0.127***	-0.154***	0.133***	-0.123***	0.118**
	(-2.979)	(2.856)	(3.445)	(3.111)	(-2.713)	(2.431)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3004	3004	3004	3004	3004	3004
Log likelihood	-309	-309	-308	-308	-262	-262
Prob > Chi^2	0.000	0.000	0.000	0.000	0.000	0.000

Table 6: Instrumental variable regressions for board effectiveness and bank wrongdoing

This table reports the instrumental variable (IV) regression results. The endogenous variables are *Monitoring Quality* and *Advising Quality*. The instrumental variables are *Ln(Distance Airport),* the natural logarithm of the distance from the bank's headquarters to the nearest airport and *Ln(Population),* the natural logarithm of the population of the county of the bank's headquarters. Columns (1), (2), (5) and (6) report the first-stage estimation results while Columns (3), (4), (7) and (8) report the second-stage results. The sample covers the period 1999–2012. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

	1st stage		2nd stage		1st stage		2nd stage	
	Monitoring Quality		P(M=1)	P(D=1|M=1)	Advising Quality		P(M=1)	P(D=1|M=1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(Distance airport)	-0.016***	-0.021***			-0.021	0.002		
	(-4.105)	(-4.633)			(-0.602)	(0.053)		
Ln(Population)	-0.006**	-0.007**			0.120***	0.139***		
	(-2.003)	(-2.284)			(4.688)	(4.401)		
Fitted Monitoring Quality			**-16.629*** **	**25.287*** **				
			(-3.950)	**(6.011)**				
Fitted Advising Quality							**-2.073*** **	**0.510* **
							(-4.745)	**(1.659)**
ROA	-0.005		-0.044		-0.155***		0.439***	
	(-1.452)		(-1.358)		(-3.912)		(4.749)	
Leverage	0.260		14.724***		2.993		5.886	
	(1.413)		(5.385)		(1.419)		(1.395)	
Industry charter value	0.010		-7.293***		2.725***		-15.421***	
	(0.330)		(-6.588)		(5.520)		(-6.620)	
(Industry charter value)^2	-0.002		2.261***		-0.935***		4.721***	
	(-0.204)		(6.193)		(-5.821)		(6.131)	
Ln(Assets)	0.004	-0.000	0.051	0.993***	2.456***	2.370***	-5.266***	2.001**
	(0.526)	(-0.049)	(0.514)	(6.871)	(14.048)	(13.597)	(-4.667)	(2.415)
Asset growth	-0.086***	-0.112***	-1.109*	-0.321	0.025	-0.126	0.275	-1.929***
	(-4.538)	(-5.088)	(-1.802)	(-0.499)	(0.120)	(-0.453)	(0.436)	(-4.431)
Charter value	0.003	0.013**	-0.222**	0.162	0.245***	0.211**	-0.709***	0.286*
	(0.536)	(2.288)	(-2.000)	(1.483)	(2.771)	(2.230)	(-4.440)	(1.950)
Portfolio risk	0.055	0.051	1.318**	1.247*	2.423***	2.610**	-3.700***	2.193**
	(1.458)	(1.138)	(2.313)	(1.791)	(2.967)	(2.557)	(-2.896)	(2.081)
Loans	-0.147***	-0.119***	-2.025**	2.412***	-2.247***	-1.980**	3.687***	-0.346
	(-3.932)	(-2.706)	(-2.538)	(2.828)	(-3.331)	(-2.358)	(3.576)	(-0.415)
Non-performing loans	-0.401	-0.290	-5.062	-12.302**	-2.252	-3.453	8.233	-11.970*
	(-0.787)	(-0.457)	(-0.885)	(-1.999)	(-0.702)	(-0.821)	(0.682)	(-1.863)
Tier-1 capital	0.875***	0.528***	17.669***	-21.428***	7.939***	3.599	-12.639**	-5.189
	(3.822)	(2.713)	(3.618)	(-5.529)	(2.759)	(1.523)	(-2.044)	(-1.610)
Board size	0.002**	0.002*	0.035	-0.141***	-0.016	-0.023	0.038	-0.064***
	(2.186)	(1.790)	(1.566)	(-5.115)	(-1.342)	(-1.555)	(1.450)	(-2.947)
Board independence	-0.040	-0.065*	0.132	-0.017	0.439	1.128**	0.178	-0.689
	(-1.461)	(-1.850)	(0.324)	(-0.038)	(1.162)	(2.264)	(0.350)	(-1.306)
Board financial	-0.273***	-0.270***	-5.116***	6.711***	2.761***	3.161***	-6.522***	1.727
expertise	(-6.056)	(-5.350)	(-4.065)	(5.469)	(4.504)	(4.569)	(-4.567)	(1.456)
CEO tenure	-0.035***	-0.034***	-0.556***	0.873***	-0.030***	-0.027***	0.072***	0.012
	(-61.916)	(-53.104)	(-3.778)	(6.127)	(-5.701)	(-4.413)	(4.223)	(0.958)
CEO is chair	0.022***	0.020**	0.633***	-1.061***	0.111	0.134	-0.066	-0.142
	(3.019)	(2.371)	(4.359)	(-6.433)	(1.571)	(1.537)	(-0.380)	(-1.091)
Abnormal ROA		-0.004		-0.272***		0.033		-0.224***
		(-1.013)		(-4.994)		(0.762)		(-4.292)
Adverse stock return		0.019		1.013***		0.286		0.817***
		(0.949)		(3.933)		(1.319)		(-3.783)
Abnormal stock volatility		0.117		0.897		2.064**		3.720***
		(1.614)		(1.365)		(2.541)		(3.615)
Abnormal stock turnover		0.002		-0.144***		-0.282**		-0.211**
		(0.282)		(-4.273)	(-2.351)	(-3.699)		(-2.000)
Observations	4072	3004	3004	3004	4072	3004	3004	3004
R-Squared	0.568	0.564			0.607	0.631		
Log likelihood			-477	-477			-478	-478
Prob>Chi^2			0.000	0.000			0.000	0.000
F-statistics (IVs)	10.554	11.047			10.918	11.135		

Table 7: Board quality and bank's accounting measures of risk

This table estimates the impact of board monitoring and advising quality on various measures of risk. The dependent variables are Tier-1 capital ratio, bank's portfolio risk and the fraction of non-performing loans. All models include year dummies and bank-fixed effects. Standard errors are clustered at the bank level. The sample covers the period 1999–2012. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

	Tier-1 capital		Portfolio risk		Non-performing loans	
	(1)	(2)	(3)	(4)	(5)	(6)
Monitoring Quality	0.007***		-0.032***		-0.004**	
	(2.651)		(-3.461)		(-2.057)	
Advising Quality		0.0003**		0.000		0.000
		(1.982)		(0.288)		(0.199)
ROA	0.000	0.000	0.009***	0.009***	-0.001**	-0.001**
	(0.812)	(0.861)	(5.903)	(5.893)	(-2.095)	(-2.077)
Leverage	-0.339***	-0.341***	0.722***	0.712***	0.021*	0.020*
	(-11.919)	(-11.823)	(2.850)	(2.803)	(1.916)	(1.830)
Ln(Assets)	-0.002	-0.003	-0.004	-0.004	-0.001	-0.001
	(-1.451)	(-1.581)	(-0.435)	(-0.430)	(-0.926)	(-0.889)
Asset growth	-0.006***	-0.006***	-0.002	-0.002	0.000	0.000
	(-3.101)	(-3.255)	(-0.239)	(-0.191)	(0.523)	(0.617)
Charter value	0.001*	0.001*	-0.005	-0.005	0.000	0.000
	(1.712)	(1.705)	(-1.249)	(-1.232)	(1.256)	(1.271)
Portfolio risk	0.026**	0.025**	-	-	0.004	0.005
	(2.359)	(2.309)	-	-	(0.682)	(0.744)
Loans	0.007	0.008	0.520***	0.522***	-0.007	-0.007
	(0.763)	(0.832)	(9.791)	(9.827)	(-1.057)	(-1.062)
Non-performing loans	0.084**	0.079*	0.578**	0.603**	-	-
	(1.974)	(1.822)	(1.969)	(1.965)	-	-
Tier-1 capital	-	-	0.656*	0.633*	-0.001	-0.004
	-	-	(1.945)	(1.873)	(-0.076)	(-0.282)
Board size	-0.000	-0.000	0.000	0.001	-0.000***	-0.000***
	(-0.579)	(-1.163)	(0.196)	(0.871)	(-3.151)	(-3.006)
Board independence	0.008*	0.006	-0.008	-0.002	-0.005*	-0.004
	(1.768)	(1.404)	(-0.425)	(-0.105)	(-1.724)	(-1.560)
Board financial expertise	0.013*	0.011*	0.034	0.042	0.004	0.005
	(1.939)	(1.665)	(0.861)	(1.080)	(0.560)	(0.710)
CEO tenure	0.000	-0.002***	-0.007**	0.003	-0.001**	-0.000
	(0.294)	(-2.786)	(-2.026)	(1.234)	(-2.206)	(-0.151)
CEO is chair	-0.000	-0.000	0.000	0.001	-0.002**	-0.002**
	(-0.309)	(-0.391)	(0.075)	(0.182)	(-2.309)	(-2.285)
Constant	0.458***	0.472***	-0.235	-0.258	0.064***	0.061***
	(9.392)	(9.645)	(-0.581)	(-0.636)	(3.037)	(2.891)
Bank-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3519	3519	3519	3519	3519	3519
R-Squared	0.672	0.671	0.820	0.820	0.524	0.521

Table 8: Board quality and CEO's anticipated costs of misconduct

This table estimates the impact of board monitoring and advising quality on a CEO's penalties following an enforcement action. The dependent variables are an indicator of CEO dismissal, Ln(CEO total pay), the level of CEO pay relative to other top executives at the same bank (CEO pay slice) and CEO pay-risk sensitivity (vega). All models include year dummies and bank-fixed effects. Standard errors are clustered at the bank level. The sample covers the period 1999–2012. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Panel A: Monitoring quality and CEO's anticipated costs of misconduct

	CEO dismissal		CEO pay		CEO pay slice		CEO vega	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Monitoring Quality		**0.097**		**-0.474****		**-0.117****		**-0.123****
*** Misconduct**		**(0.620)**		**(-2.291)**		**(-2.405)**		**(-2.030)**
Misconduct	0.013	-0.037	0.058	0.303**	0.016	0.077*	-0.018	0.038
	(0.263)	(-0.422)	(0.606)	(2.002)	(0.677)	(1.795)	(-0.391)	(0.574)
Monitoring Quality	-0.082	-0.089	-0.045	-0.007	-0.003	0.006	0.025	0.046
	(-1.124)	(-1.245)	(-0.265)	(-0.039)	(-0.111)	(0.197)	(0.393)	(0.839)
ROA	-0.025	-0.025	0.029	0.029	0.001	0.001	0.003	0.003
	(-1.537)	(-1.534)	(0.950)	(0.945)	(0.163)	(0.164)	(0.458)	(0.546)
Leverage	0.810	0.798	-	-	-0.073	-0.058	-0.367	-0.361
	(1.429)	(1.409)	-	-	(-0.420)	(-0.333)	(-0.860)	(-0.841)
Ln(Assets)	-0.055	-0.057	0.298**	0.305**	0.001	0.002	0.016	0.018
	(-1.002)	(-1.029)	(2.373)	(2.415)	(0.024)	(0.107)	(0.275)	(0.319)
Charter value	-0.057**	-0.058**	0.124***	0.130***	0.008	0.009	0.046	0.047
	(-2.096)	(-2.094)	(2.825)	(2.962)	(0.954)	(1.114)	(1.316)	(1.361)
Board size	0.008	0.008	-0.000	0.000	-0.002	-0.002	-0.001	-0.000
	(1.470)	(1.461)	(-0.007)	(0.006)	(-0.868)	(-0.836)	(-0.156)	(-0.094)
Board independence	-0.318*	-0.318*	-0.693**	-0.696**	0.007	0.006	0.118	0.116
	(-1.955)	(-1.961)	(-2.243)	(-2.244)	(0.147)	(0.139)	(0.589)	(0.577)
Board financial	0.118	0.115	0.437	0.448	0.089	0.092	-0.230	-0.228
expertise	(0.534)	(0.524)	(1.008)	(1.023)	(1.096)	(1.126)	(-1.165)	(-1.157)
CEO tenure	0.023***	0.023***	-0.006	-0.007	-0.001	-0.001	0.005	0.005
	(4.179)	(4.153)	(-0.588)	(-0.640)	(-0.522)	(-0.582)	(1.529)	(1.563)
CEO is chair	0.030	0.031	0.112	0.106	0.001	-0.001	-0.018	-0.020
	(0.635)	(0.657)	(1.267)	(1.203)	(0.059)	(-0.041)	(-0.412)	(-0.452)
CEO ownership	-0.636**	-0.643**	-0.320	-0.280	-0.197	-0.189	-	-
	(-2.569)	(-2.588)	(-0.467)	(-0.414)	(-1.488)	(-1.442)	-	-
Stock returns	-0.031	-0.035	0.137	0.154	-0.002	0.002	-0.036	-0.031
	(-0.176)	(-0.198)	(0.579)	(0.692)	(-0.057)	(0.060)	(-0.326)	(-0.285)
Institutional ownership	-0.178	-0.171	0.872*	0.835*	0.105	0.097	0.093	0.087
	(-0.864)	(-0.833)	(1.792)	(1.711)	(1.269)	(1.176)	(0.505)	(0.475)
Bank-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	944	944	944	944	944	944	738	738
R-Squared	0.246	0.247	0.854	0.855	0.461	0.467	0.783	0.783

Panel B: Advising Quality and CEO's anticipated costs of misconduct

	CEO dismissal	CEO pay	CEO pay slice	CEO vega
	(1)	(2)	(3)	(4)
Advising Quality	-0.012	0.002	14.194	0.004
*Misconduct	(-1.639)	(0.086)	(1.244)	(0.622)
Misconduct	0.056	0.049	-44.529	0.006
	0.833	(0.382)	(-0.930)	(0.293)
Advising Quality	0.005	-0.002	16.956***	0.002
	(0.918)	(-0.132)	(2.861)	(0.003)

Table 9: Do effective boards alleviate shareholder wealth losses when misconduct becomes public?

This table reports the multivariate regression analyses of stock market reactions to the announcements of banks receiving an enforcement action. The dependent variables of all models are CARs for a three-day window [-1, +1] (%). All models include year dummies. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

	CARs [-1, +1] %			
	(1)	**(2)**	**(3)**	**(4)**
Monitoring Quality$_{t-1}$	6.052**			
	(2.307)			
Monitoring Quality $_{t}$		7.477**		
		(2.572)		
Advising Quality$_{t-1}$			-0.236	
			(-0.801)	
Advising Quality $_{t}$				-1.585
				(-0.530)
ROA	0.994*	0.996*	1.156*	1.112*
	(1.697)	(1.739)	(1.755)	(1.698)
Leverage	-53.402	-58.306	-53.766	-46.436
	(-1.249)	(-1.411)	(-1.236)	(-1.052)
Ln(Assets)	0.064	0.366	-0.200	-0.640
	(0.045)	(0.263)	(-0.137)	(-0.448)
Asset growth	-2.220	-1.991	-3.583	-2.711
	(-0.283)	(-0.253)	(-0.441)	(-0.334)
Charter value	0.243	0.221	0.153	0.052
	(0.332)	(0.295)	(0.195)	(0.066)
Portfolio risk	1.763	1.721	2.988	1.177
	(0.163)	(0.161)	(0.286)	(0.109)
Loans	-1.654	-0.771	-2.475	-2.438
	(-0.189)	(-0.086)	(-0.278)	(-0.273)
Non-performing loans	18.036	23.851	5.660	7.418
	(0.475)	(0.639)	(0.148)	(0.195)
Tier-1 capital	-38.891	-46.870	-45.551	-37.507
	(-0.918)	(-1.173)	(-1.108)	(-0.882)
Board size	0.278	0.217	0.297	0.326
	(1.162)	(0.892)	(1.245)	(1.305)
Board independence	-1.750	-0.153	-1.156	-0.251
	(-0.246)	(-0.022)	(-0.158)	(-0.034)
Board financial expertise	3.484	3.372	2.972	3.060
	(0.522)	(0.485)	(0.413)	(0.436)
CEO tenure	0.245*	0.321**	0.087	0.095
	(1.907)	(2.204)	(0.706)	(0.783)
CEO is chair	-1.049	-1.350	-0.287	-0.417
	(-0.538)	(-0.670)	(-0.143)	(-0.209)
Constant	38.107	35.504	47.438	54.978
	(0.855)	(0.812)	(1.028)	(1.208)
Observations	206	206	206	206
R-squared	0.216	0.225	0.197	0.193

Appendix 1: Definition of variables

Variable	Definition	Source
Key governance measures		
Monitoring Quality	The fraction of board members who are appointed before the CEO takes office	BoardEx
Advising Quality	The number of directors to whom board members on the board are collectively connected, scaled by board size	BoardEx
Bank-specific characteristics		
ROA (%)	Earnings before interest and taxes (EBIT) divided by book value of total assets (BHCK2170)	CRSP, FR Y9-C
Leverage	Book value of liabilities divided by book value of total assets	FR Y-9C
Industry charter value	The median charter value in a given year	FR Y-9C
Ln(Assets)	Natural logarithm of total assets (BHCK2170)	FR Y-9C
Asset growth	The percentage of change in total assets relative to prior year	FR Y-9C
Charter value	Market value of equity divided by book value of equity	CRSP, FR Y9-C
Portfolio risk	Ratio of risk-weighted assets (BHCKA223) divided by total assets	FR Y-9C
Loans	Ratio of total loans (BHCK2122) divided by total assets	FR Y-9C
Non-performing loans	Ratio of loans past due day 90 days or more (BHCK5525) and nonaccrual loans (BHCK5526) divided by total assets	FR Y-9C
Tier-1 capital	Ratio of Tier-1 capital (BHCK8274) divided by total assets	FR Y-9C
Corporate governance measures		
Board size	The number of directors sitting on the board	BoardEx
Board independence	The fraction of non-executive directors on the board	BoardEx
Board financial expertise	The fraction of independent directors with prior experience working as a CFO or finance director	BoardEx
Institutional ownership	The fraction of shares held by investment companies and independent investment advisors	Thomson One Banker
CEO characteristics and incentives		
CEO tenure	The number of years the CEO has served in this position	BoardEx
CEO is chair	Dummy that equals 1 if CEO is also the chairperson	BoardEx
CEO ownership	The fraction of shares owned by the CEO	ExecuComp
Ln(CEO total pay)	The natural logarithm of CEO total pay	ExecuComp
CEO bonus/total compensation	CEO bonus divided by CEO total pay	ExecuComp
CEO vega	Sensitivity of CEO compensation to share price, expressed in $'1000	ExecuComp
CEO delta	Sensitivity of CEO compensation to stock return volatility, expressed in $'1000	ExecuComp
CEO pay slice	The fraction of top five executives' pay captured by the CEO	ExecuComp
CEO dismissal	We follow Khanna, Kim, and Lu (2014) to identify CEO dismissal. If the press reports the CEO turnover as "fired", "forced out", "dismissed", "resigned following a period of bad performance" or "resigned due to policy differences" it is classified as forced. We classify all departures of CEOs who are older than 60 as voluntary. We classify departures of CEOs who are younger than 60 as "dismissed" if	Factiva

	the press does not report the reason as "poor health", "death", or "acceptance of another position"; or if the article reports the CEO is retiring, but does not announce the succession plan at least six months before the new CEO takes office.	
Characteristics of top five executives		
% Ivy League executives	The fraction of top five executives with an Ivy League education	BoardEx
% Military executives	The fraction of top five executives with prior military experience	BoardEx
% MBA executives	The fraction of top five executives with an MBA degree	BoardEx
Detection of misconduct		
Abnormal ROA	Residual from the regression: $ROA_t = \alpha_0 + \alpha_1 ROA_{t-1} + \alpha_2 ROA_{t-2} + \varepsilon$	CRSP
Adverse stock return	Dummy equals 1 if stock return is below -20% (or in the bottom 10% of all stocks in CRSP bank sample)	CRSP
Abnormal stock volatility	The demeaned standard deviation of daily stock volatility in a year	CRSP
Abnormal stock turnover	The demeaned average daily stock turnover in a year	CRSP
Instrumental variables		
Ln(Distance airport)	Distance from the bank's headquarters to the nearest airport	US Census file
Ln(Population)	The population of the county of the bank's headquarters	US Census Bureau

Online appendix: Robustness tests

Table A1: Is Monitoring Quality driven by CEO tenure?

Residual Monitoring Quality is the residual from a regression of *Monitoring Quality* on CEO tenure. Column (1) reports the estimated relations between *Residual Monitoring Quality* and the commission of misconduct (M=1), and Column (2) reports the relations between *Residual Monitoring Quality* and detection, given misconduct (D=1|M=1). Standard errors are clustered at the bank level. The sample covers the period 1999–2012. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

	P(M=1)	**P(D=1|M=1)**
	(1)	**(2)**
Residual Monitoring Quality	-0.893**	1.871**
	(-2.542)	(2.109)
Other controls	Yes	Yes
Observations	3004	3004
Log likelihood	-505	-505
Prob>Chi^2	0.000	0.000

Table A2: Does Monitoring Quality capture director experience?

Board tenure is the average tenure of all board members less the CEO. Panel A reports the results when *Monitoring Quality* and *Board tenure* are both included in the model. Panel B reports the residual regression results. *Board-tenure adjusted monitoring quality* is the residual from a regression of *Monitoring Quality* on board tenure. Standard errors are clustered at the bank level. The sample covers the period 1999–2012. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Panel A: Controlling for average board tenure		
	P(M=1)	**P(D=1|M=1)**
	(1)	**(2)**
Monitoring Quality	-0.559**	0.949**
	(-2.172)	(2.008)
Board tenure	-0.049*	0.214***
	(-1.959)	(3.353)
Other controls	Yes	Yes
Observations	3004	3004
Log likelihood	-465	-465
Prob>Chi^2	0.000	0.000

Panel B: Residual regression		
	P(M=1)	**P(D=1|M=1)**
	(1)	**(2)**
Board-tenure adjusted monitoring quality	-2.143***	0.440*
	(-6.267)	(1.845)
Other controls	Yes	Yes
Observations	3004	3004
Log likelihood	-467	-467
Prob>Chi^2	0.000	0.000

Table A3: Does Advising Quality capture Board busyness?

Board busyness is a dummy that equals 1 when the majority of board members hold three or more directorships and 0 otherwise. Panel A reports the results when *Advising Quality* and *Board busyness* are both included in the analysis. Panel B reports the results when only *Board busyness* is included. Standard errors are clustered at the bank level. The sample covers the period 1999–2012. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Panel A: Advising Quality and Board busyness are included		
	P(M=1)	**P(D=1|M=1)**
	(1)	**(2)**
Advising Quality	-0.119***	0.076**
	(0.033)	(0.032)
Board busyness	-0.513	4.962
	(0.458)	(4.155)
Other controls	Yes	Yes
Observations	945	945
Log likelihood	-195	-195
Prob>Chi^2	0.000	0.000

Panel B: Only Board busyness is included		
	P(M=1)	**P(D=1|M=1)**
	(1)	**(2)**
Board busyness	0.028	-0.575
	(0.309)	(0.455)
Other controls	Yes	Yes
Observations	945	945
Log likelihood	-195	-195
Prob>Chi^2	0.000	0.000

Table A4: Probit model estimation for board effectiveness and bank misconduct

This table reports standard probit model estimation results. The dependent variable equals 1 if an enforcement action is issued during the year. Standard errors are clustered at the bank level. The sample covers the period 1999–2012. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

	Probit P(M=1)	**Probit P(M=1)**	**Probit P(M=1)**
	(1)	**(2)**	**(3)**
Monitoring Quality	-0.376**		-0.388**
	(-2.121)		(-2.187)
Advising Quality		-0.040**	-0.041**
		(-1.975)	(-1.999)
ROA	-0.139***	-0.141***	-0.143***
	(-5.196)	(-5.255)	(-5.297)
Leverage	4.266**	3.945**	4.201**
	(2.195)	(2.041)	(2.159)
Ln(Assets)	0.213***	0.296***	0.296***
	(2.969)	(3.603)	(3.624)
Asset growth	-0.540*	-0.529*	-0.551*
	(-1.825)	(-1.749)	(-1.835)
Charter value	-0.135**	-0.128*	-0.133*
	(-1.963)	(-1.836)	(-1.921)
Portfolio risk	0.561	0.740	0.762
	(1.095)	(1.344)	(1.413)
Loans	-0.137	-0.236	-0.298
	(-0.295)	(-0.488)	(-0.621)
Non-performing loans	6.756**	7.110**	6.853**
	(1.967)	(2.061)	(1.982)
Tier-1 capital	-0.943	-1.458	-1.065
	(-0.392)	(-0.594)	(-0.441)
Board size	-0.033**	-0.035***	-0.033**
	(-2.556)	(-2.747)	(-2.575)
Board independence	-0.160	-0.099	-0.112
	(-0.573)	(-0.345)	(-0.391)
Board financial expertise	-0.322	-0.195	-0.290
	(-0.664)	(-0.411)	(-0.601)
CEO tenure	0.008	0.019***	0.007
	(1.059)	(3.822)	(0.881)
CEO is chair	-0.076	-0.074	-0.062
	(-0.910)	(-0.884)	(-0.737)
Observations	4066	4066	4066
Prob>Chi^2	0.000	0.000	0.000
Log likelihood	-687	-686	-684

Table A5: Alternative specification of bivariate probit model

Columns (1) and (3) report the estimated relations between *Monitoring Quality* and *Advising Quality* and the commission of misconduct (M=1), and Columns (2) and (4) report the relations between *Monitoring Quality* and *Advising Quality* and detection, given misconduct (D=1|M=1). Standard errors are clustered at the bank level. The sample covers the period 1999–2012. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

	P(M=1)	**P(D=1|M=1)**	**P(M=1)**	**P(D=1|M=1)**
	(1)	**(2)**	**(3)**	**(4)**
Monitoring Quality	-0.769*	1.048**		
	(-1.751)	(1.987)		
Advising Quality			-0.042*	0.084***
			(-1.684)	(2.889)
Ln(Assets)	-0.106	0.290***	0.034	0.048
	(-1.460)	(2.886)	(0.455)	(0.545)
Asset growth	-0.670	-0.064	-0.714	0.089
	(-0.797)	(-0.058)	(-1.120)	(0.120)
Charter value	-0.296***	0.260**	-0.284***	0.270**
	(-2.816)	(2.001)	(-2.795)	(2.328)
Portfolio risk	0.196	0.443	-1.223	2.407***
	(0.216)	(0.379)	(-1.485)	(2.730)
Loans	-1.121	1.483	1.508*	-2.142**
	(-0.917)	(0.963)	(1.880)	(-2.466)
Non-performing loans	6.851*	-12.183**	36.233*	-41.571*
	(1.677)	(-2.519)	(1.711)	(-1.848)
Tier-1 capital	-6.458	6.817	-10.662***	12.299***
	(-1.572)	(1.166)	(-3.071)	(2.945)
Board size	-0.010	-0.016	-0.043	0.038
	(-0.289)	(-0.344)	(-1.530)	(1.239)
Board independence	-0.015	-0.053	-0.666	0.785
	(-0.015)	(-0.041)	(-0.572)	(0.572)
Board financial expertise	0.467	-1.026	0.322	-0.893
	(0.526)	(-0.926)	(0.353)	(-0.823)
CEO tenure	0.035*	-0.032	0.432***	-0.520***
	(1.722)	(-1.384)	(4.325)	(-4.888)
CEO is chair	0.407*	-0.641**	0.253	-0.362
	(1.788)	(-2.211)	(1.283)	(-1.522)
Abnormal ROA		-0.179***		-0.151***
		(-2.656)		(-3.497)
Adverse stock return		0.362*		0.337*
		(1.904)		(1.950)
Abnormal stock volatility		2.026**		1.568***
		(2.256)		(3.126)
Abnormal stock turnover		-0.045		0.008
		(-0.689)		(0.159)
Observations	3004	3004	3004	3004
Prob>Chi^2	0.000	0.000	0.000	0.000
Log likelihood	-504	-504	-500	-500

Table A6: Are our results driven by the 2008 crisis?

Odd-numbered columns report the estimated relations between *Monitoring Quality* and *Advising Quality* and the commission of misconduct (M=1), and even-numbered columns report the relations between *Monitoring Quality* and *Advising Quality* and detection, given misconduct (D=1|M=1). Standard errors are clustered at the bank level. The sample covers the period 1999–2012. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

	P(M=1)	**P(D=1|M=1)**	**P(M=1)**	**P(D=1|M=1)**	**P(M=1)**	**P(D=1|M=1)**	**P(M=1)**	**P(D=1|M=1)**
	1999–2007				**2008–2012**			
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Monitoring Quality	-2.701**	7.568*			-0.959**	1.810**		
	(-2.533)	(1.785)			(-2.095)	(2.112)		
Advising Quality			-0.146***	0.833**			-0.108***	0.117***
			(-3.258)	(2.406)			(-3.682)	(4.521)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3004	3004	3004	3004	3004	3004	3004	3004
Log likelihood	-309	-309	-308	-308	-262	-262	-261	-261
Prob > Chi^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table A7: Monitoring and Advising Quality for independent directors

Monitoring Quality of independent directors is the fraction of independent directors who are appointed before the current CEO. *Advising Quality of independent directors* is the number of directors to whom independent directors on the board are collectively connected, scaled by the total number of independent directors sitting on the board. Columns (1) and (3) report the estimated relations between *Monitoring Quality of independent directors* and *Advising Quality of independent directors* and the commission of misconduct (M=1), and Columns (2) and (4) report the relations between *Monitoring Quality of independent directors* and *Advising Quality of independent directors* and detection, given misconduct (D=1|M=1). Standard errors are clustered at the bank level. The sample covers the period 1999–2012. Definitions of all variables are provided in Appendix 1. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

	P(M=1)	**P(D=1|M=1)**	**P(M=1)**	**P(D=1|M=1)**
	(1)	**(2)**	**(3)**	**(4)**
Monitoring Quality of independent directors	-0.727**	1.713*		
	(-2.316)	(1.904)		
Advising Quality of independent directors			-0.288***	0.076***
			(-6.267)	(4.243)
Other controls	Yes	Yes	Yes	Yes
Observations	3004	3004	3004	3004
Log likelihood	-505	-505	-493	-493
Prob>Chi^2	0.000	0.000	0.000	0.000