

# **The Sarbanes-Oxley Act of 2002: Relationship to Magnitude of Financial Corruption and Corrupt Organizational Cultures**

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*Absent field research that responds to whether the US Sarbanes-Oxley Act of 2002 (SOX) meets its goal to reduce financial corruption, our understanding of the effectiveness of SOX is incomplete. Because financial corruption results in a substantial adverse impact on a multitude of organizational stakeholders, such understanding is valuable to inform decisions on enforcement of SOX and develop effective regulatory interventions. The purpose of this study was to empirically assess the impact of SOX on financial corruption. We conducted a thorough review of 2,585 Accounting and Auditing Enforcement Releases available from the US Securities and Exchange Commission and identified 70 and 32 cases of financial corruption in large US corporations that occurred before and after SOX was enacted in 2002, respectively. Deceptive practices were typically pervasive, extended over multiple years, involved large stakeholder damages, and perpetrated by senior leaders (e.g., CEOs, CFOs, VPs, boards of directors). We provided empirical evidence that SOX effectively reduced corrupt behaviors. Namely, the financial restatement magnitude, a measure of the magnitude of financial corruption, declined after SOX compared to before SOX. Also, the perpetrator group size, a measure of the extent the organizational sub-culture was corrupt, was smaller after SOX was enacted. This study has novel implications that offer important contributions to research and practice.*

*Keywords: financial corruption, Sarbanes-Oxley Act, corrupt organizational culture, magnitude of financial corruption, perpetrator group size*

## **INTRODUCTION**

Corruption has an extensive adverse impact on organizational stakeholders. Corruption has a systemic and persistent nature (Hirsch & Milner, 2016), involving industry-wide forms (e.g., financial, healthcare

services; Ashforth et al., 2008), regional forms (e.g., California's energy crisis; McLean & Elkind, 2003), as well as various types of organizations (e.g., business, government, academic; Ferguson, 2012). Corruption in the US financial services industry was shown to be the root cause of the worldwide financial crisis of 2007-2008 (Ferguson, 2012). Vivid examples of financial corruption include Enron Corporation and WorldCom, Inc., which resulted in \$74 billion (Overton, 2013) and \$180 billion in losses for investors (Bruner, 2004), respectively.

In this study, we focus on *financial corruption* defined as continuous deceptive practices in financial reports for two or more years (cf. Gorshunov et al., 2019). Financial corruption is personified by organizations like HealthSouth Corporation where top managers systematically defrauded stakeholders over seven years and pervaded the organizational culture (Armenakis & Lang, 2014). We ground our definition on an influential line of research that refers to the temporal nature of misconduct to describe how corruption escalates from a single misdeed to affect organizational culture. Companies like Enron and HealthSouth did not begin deceitful. Rather deceptive practices crept in at some point and with time normalized into a culture (Fleming & Zyglidopoulos, 2008; Sweeney, 2003). Time has to pass for routinized violations to become normalized and a taken-for-granted organizational logic, manifesting in underlying assumptions of culture (Ashforth & Anand, 2003). Corrupt organizational cultures unfold gradually—over time increasing in severity and pervasiveness (Gino & Bazerman, 2009; Zyglidopoulos et al., 2009). Given enough time has passed, an initial unchecked deception can begin the self-reinforcing sequence of ongoing offenses that over time evolves into an organization-level phenomenon (Ashforth et al., 2008; Fleming & Zyglidopoulos, 2008). After a couple of years of condoning such behaviors—corrupt practices become systematic, ingrained, and intractable (Ashforth et al., 2008; Sweeney, 2003). Accordingly, a pattern of continuous deceptive practices for two years or longer is likely to reflect a culture normalizing corruption in a corporation. Normalized corruption allows perpetrators to defraud while maintaining a moral self-image (Umphress et al., 2010) and can be perpetuated for a long period on a wide scale (Ashforth & Anand, 2003).

In the wake of a series of high-profile exposures in US public firms (e.g., Enron, WorldCom), the US Congress passed the US Sarbanes-Oxley Act of 2002 (SOX) intending to reduce such corruption (Rockness & Rockness, 2005). Gordon and Nazari (2018) reviewed 115 SOX-related studies published in business ethics journals and identified 14 studies that used SOX in developing hypotheses or research questions. Among these 14 studies, only three studies investigated the impact of SOX on corrupt organizational cultures. These three studies (e.g., Rockness & Rockness, 2005) were non-empirical and tentatively concluded that corrupt cultures might nullify the effectiveness of SOX (Gordon & Nazari, 2018). In the review of over 120 studies in accounting, finance, and law, Coates and Srinivasan (2014) concluded that prior research was largely critical of SOX, yet the evidence was inconclusive that SOX resulted in negative outcomes (e.g., increase in expenditures on internal control systems, decrease in the competitiveness of US firms). Coates and Srinivasan corroborated conclusions of Gordon and Nazari by identifying little research investigating positive outcomes, which SOX regulators intended to achieve (i.e., decrease in criminal behaviors by US firms). Willits and Nicholls (2014) added that “evidence indicates that SOX might have improved financial reporting quality, although it might not have deterred actual fraudulent behavior” (p. 43). Absent field research that responds to whether SOX meets its goal, “political entrepreneurs have used clear (if overstated) evidence on direct costs to deride the Act as a symbol of regulatory overreach” (Coates & Srinivasan, 2014, p. 628).

While theoretical research has contributed important insights about the impact of SOX on financial corruption, studies that have empirically validated these inferences are scant (see Gordon & Nazari, 2018). Our understanding of whether SOX reaches its goal in reducing deceptive practices remains incomplete (Rockness & Rockness, 2005). Given large stakes for policy-makers, public companies, investors, regulators, and the general public in the ongoing uncertainty about the impact of SOX (Coates & Srinivasan, 2014), such understanding is valuable to resolve this uncertainty and develop effective regulatory interventions. Thus, the purpose of our study was to enhance such understanding by empirically assessing the impact of SOX on financial corruption.

By synthesizing extant theory and research, we developed two research hypotheses. One is related to the financial restatement magnitude and the other concerns perpetrator group size. To examine our hypotheses, we conducted a thorough review of 2,585 *Accounting and Auditing Enforcement Releases* issued by the US Securities and Exchange Commission (SEC) and identified 70 and 32 cases of financial corruption in large US corporations that occurred before and after SOX was enacted in 2002, respectively.

Our study contributes to research and practice in three ways. First, we provide empirical evidence in a natural field setting that complements prior non-empirical research. Second, this study contributes to a discussion on whether Becker's (a Nobel laureate in economics) rational crime theory (1968) is adequate to predict and explain the impact of SOX on financial corruption by applying the theory in this context and providing quantitative evidence. Finally, we offer recommendations for policy-makers and regulators based on quantitative evidence in this study.

## HYPOTHESES

Becker's rational crime theory (1968) is a prevalent approach to understand economic crimes in organizations (see Cumming et al., 2018; Palmer, 2012). The theory views perpetrators as rational individuals who commit economic crimes because of expected gains from the crimes and refrain from criminal behaviors because of expected costs (i.e., the severity of punishment and likelihood of detection and prosecution; Becker, 1968). The theory assumes that individuals are rational in such a way that their behavior is forward-looking and consistently optimizes a perceived well-ordered utility function (Becker, 1993). The explicit use of the rational crime theory by the US Sentencing Commission to develop rules for punishing violators of federal statutes (Becker, 1993) and lawmakers to support enforcement of sanctions (Baer, 2008) demonstrates that the theory has predictive adequacy.

Criminal behavior may be rational if individuals perceive financial or other rewards from crime compared to compliance, considering expected costs of crime (Becker, 1993). Prospective perpetrators measure perceived expected costs by the severity of punishment and by the likelihood of detection and prosecution. Becker (1968) treated the likelihood of detection and severity of punishment as mutually interchangeable substitutes. That is, to obtain an optimal level of crime deterrence (i.e., minimize the extent of criminal behaviors), social-control agents (i.e., actors who represent a collectivity and can impose sanctions on that collectivity's behalf, such as the SEC; Greve et al., 2010) can expand their monitoring efforts to increase the likelihood of detection and prosecution. Otherwise, social-control agents can attain the same level of deterrence by raising the punishment for crime.

Levels of sanctioning by social-control agents play a role in managers' contemplation and commitment of economic crimes (Zahra et al., 2005). Low levels of sanctioning by social-control agents and high rewards suggest that deception in financial reports can be an economically rational course of action (Braithwaite, 1989). Yet, prior research suggests that managers avoid the commitment of violations if they perceive effective monitoring, as well as likely detection and prosecution by social-control agents (Yiu et al., 2014). Additionally, managers refrain from committing unethical acts if they perceive a high magnitude of adverse consequences (Weber & Wasieleski, 2001).

The rational crime theory implies that a certain level of criminal behavior occurs at an optimal level of deterrence (Becker, 1968). A level of crime is expected to occur even when effective crime prevention mechanisms are in place. Becker analyzed changes in criminal behaviors as a function of the likelihood of detection and the severity of punishment. Because of either an increase in the likelihood of detection or the severity of punishment, criminal behaviors decrease. Organizational behavior research suggested that financial corruption was mitigated by effective control systems in organizations (Fleming & Zyglidopoulos, 2008). However, Fleming and Zyglidopoulos further added that internal monitoring practices were lax in corrupt firms, like Enron (McLean & Elkind, 2003).

SOX applies to all senior organizational members who can influence the adequacy and accuracy of financial reports (e.g., CEOs, CFOs, boards of directors, and audit committee members; Rockness & Rockness, 2005). SOX has changed levels of expected gains, the likelihood of detection and prosecution, as well as the severity of punishment for financial corruption in four ways. First, the Act decreased

expected gains from the crime. Namely, CEOs and CFOs are required to pay back stock-based compensation received as a result of violations in financial reports after SOX was enacted (Rockness & Rockness, 2005). Second, SOX increased the likelihood of detection of violations by strengthening the effectiveness of monitoring by audit committees and external auditors (Nelson, 2006; Willits & Nicholls, 2014). Third, the Act increased the likelihood of prosecution of crimes by enhancing the enforcement ability of the US Department of Justice (DOJ) prosecutors and SEC regulators. Particularly, the Act (a) lowered the burden of proof required to establish criminality at trial, (b) eliminated the defenses of lack of knowledge or good faith by requiring senior managers to certify the accuracy of financial reports, and (c) strengthened protection for whistleblowers who provided evidence of deception practices in financial reports (Moohr, 2003). Finally, SOX created new criminal provisions with the threat of severe punishment for financial corruption (Moohr, 2003). Moohr reported that senior managers who knowingly certify falsified financial reports were subject to maximum prison terms of 10 years and 20 years for committing the crime willfully. Managers who conspire to deceive stakeholders (i.e., secretly plan in a group to commit crimes; Baker & Faulkner, 1993) can get 25 years in prison and 20 years for deception in financial reports. Corrupt obstruction of justice is subject to 20 years in prison. To satisfy SOX requirements, the US Sentencing Commission updated sentencing guidelines by increasing maximum sentences and stipulating longer sentences for larger magnitudes of criminal behaviors (Baer, 2008; Rockness & Rockness, 2005). Thus, SOX detracts from expected gains from financial corruption and contributes to the expected likelihood of detection and prosecution of financial corruption, as well as the expected severity of punishment for financial corruption.

We investigated criminal behaviors in cases of financial corruption by comparing the financial restatement magnitude during the periods before and after SOX was enacted. Because SOX increased the maximum severity of punishment for the crime and specified that the punishment corresponded with the magnitude of criminal behaviors, we stated the following hypothesis:

***Hypothesis 1:*** *Financial restatement magnitude will decrease in financially corrupt firms after versus before SOX.*

A theory of organizational culture perceives organizations as communities and organizational members as monitors of normative appropriateness (Palmer, 2012). In organizations, members share norms of appropriate ways to think and act and contemplate prospective courses of action based on these norms (Chatman & O'Reilly, 2016). A theory of organizational culture views organizational members as rational individuals who engage in corrupt practices if corruption is regarded appropriate by cultural norms (Campbell & Göritz, 2014; Thau et al., 2015; Umphress et al., 2010). A theory of organizational culture can be a component of the rational crime theory because both theories build on rational choice theory as a mode of explanation and share compatible underlying assumptions (Palmer, 2012). A theory of organizational culture complements the rational crime theory by specifying how organizational settings can trigger corrupt reasoning and behavior, such as deviant sub-cultures that insulate perpetrators from the broader culture with its counteracting norms and beliefs (Ashforth & Anand, 2003).

The culture was shown to have a strong influence on the behaviors and attitudes of organizational members (Hartnell et al., 2019). It is well known that organizational culture is related to leader transgressions (e.g., the criminal behavior of 16 senior managers who were responsible for the \$2.7 billion financial corruption at HealthSouth; Armenakis & Lang, 2014), performance appraisal practices (e.g., Enron's rank and yank method; McLean & Elkind, 2003), and compensation systems (e.g., the commission-based compensation arrangements of bank executives who caused the worldwide financial crisis of 2007-2008; Ferguson, 2012; Zhang et al., 2008). Corruption can become normalized and a taken-for-granted organizational logic, manifesting in underlying assumptions of organizational culture (Ashforth & Anand, 2003). Organizational cultures that support corruption are manifested in scripts (i.e., cognitive frameworks of decision-making without an ethical component; Gioia, 1992), sanctioning (i.e., implicit and explicit authorization of corrupt behaviors by senior managers; Brief et al., 2001), socialization (i.e., altering newcomers' assumptions and values about corruption; Ashforth & Anand,



2003), and language euphemisms (i.e., positively valenced jargon describing corrupt practices; Anand et al., 2004). For example, similar to the Sicilian Mafia (Vaccaro & Palazzo, 2015), the term *family* was used among corrupt senior managers at HealthSouth to reinforce the sense of the group and emphasize implied obligations to other conspirators (Armenakis & Lang, 2014). As a result, corrupt practices become institutionalized within organizations and less salient as unethical and illegal for new and already existing organizational members (cf. Vaccaro & Palazzo, 2015).

Given the self-sustaining nature of corruption, reducing it necessitates an impact from a source outside corrupt organizations (Ashforth & Anand, 2003). The change in the level of sanctioning of crime by the government can affect normative assessments regarding shared understandings of right and wrong. Organizational members may consider multiple cultural contexts that vary in salience when determining the appropriateness of corrupt courses of action (Palmer, 2012). The salience of moral issues determines whether perpetrators recognize the moral element of their decisions (Jones, 1991) and reduce cheating (Gino et al., 2009). Making punitive consequences for financial corruption severe (Moohr, 2003), SOX is an instance of government intervention that influenced the reasoning and behavior of perpetrators by raising the salience of financially corrupt practices as inappropriate. For example, Weston Smith, former CFO at HealthSouth, understood the increase in the severity of punishment under SOX and expressed his willingness to cease engagement in deceptive practices, ultimately turning whistleblower to the SEC (Armenakis & Lang, 2014). Thus, SOX contributes to the salience of financially corrupt practices as wrongful among organizational members.

In addition to making punitive consequences for financial corruption severe, SOX legislators also recognized the importance of organizational culture. Socialization techniques play a pivotal role in enlisting new organizational members in corrupt practices (Zyglidopoulos & Fleming, 2008), but the effectiveness of socialization is mitigated by mechanisms that raise awareness of inappropriateness of these practices (e.g., adoption and enforcement of codes of ethics; Fleming & Zyglidopoulos, 2008). Socialization techniques fail to enlist new perpetrators in corruption if actors recognize illegality, failing to comply, leaving the organization, or blowing the whistle (Fleming & Zyglidopoulos, 2008). To reduce the number of organizational members willing to engage in financial corruption, SOX legislators prescribed guidelines for ethical culture, required to have a code of ethics for senior managers, and established criminal penalties of a maximum 10 years in prison and \$250,000 fine for retaliation against whistleblowers (Rockness & Rockness, 2005). Thus, SOX contributes to normative assessments about financial corruption by organizational members.

Corruption in organizations is perpetrated by groups of actors within and outside organizations (Ashforth & Anand, 2003; Zyglidopoulos & Fleming, 2008). Some organizational members are willing to behave unethically if this behavior allows them to remain in the group (Thau et al., 2015). Prior research provided evidence that group size of indicted defendants varied from a single person to as many as 34 conspirators in cases of *corporate fraud* that included securities and commodities fraud, financial institution fraud, money laundering, tax offenses, and bribery of foreign officials (Steffensmeier et al., 2013). The number of conspirators in 62% of the conspiracies ranged between two and seven. However, neither of these studies investigated the impact of SOX on the perpetrator group size. We explored how SOX affected the perpetrator group size in financially corrupt firms. That is, we focused on comparing the perpetrator group size in cases of financial corruption during the periods before and after SOX. Because SOX increased salience of financially corrupt practices as wrongful and influenced normative assessments about this behavior by organizational members, we posited the following hypothesis:

***Hypothesis 2: Perpetrator group size will decrease after versus before SOX.***

## **RESEARCH METHODOLOGY**

### **Sample Selection**

Following prior research (Gorshunov et al., 2019), we identified financially corrupt firms through three selection criteria. First, to avoid confounding results because of differences in financial reporting

practices across countries (Bushman & Piotroski, 2006), we focused only on US-based firms. Second, following the reasoning of Karpoff et al. (2017), we considered financial reporting in violation of Section 13(b)(2)(a), Section 13(b)(2)(b), or Section 13(b)(5) of the 1934 US Securities Exchange Act as potentially deceptive if the SEC or the US Department of Justice (DOJ) also alleged the violation of Section 10(b)-5 of the 1934 US Securities and Exchange Act or Section 17(a) of the 1933 Securities Act (see Table 1). To sue under these regulations, the SEC and the DOJ must establish some form of *scienter* (i.e., intent to deceive, manipulate, or defraud) on behalf of the defendants (Buell, 2011). Finally, to ensure our sample included only financial corruption, we used only cases that involved firms or senior managers found guilty of continuously violating Section 10(b)-5 or Section 17(a) and restated deceptive financial reports for two or more fiscal years. For example, in the case of financial corruption in Birmingham-based HealthSouth mentioned earlier, 16 senior managers were found guilty of lying in HealthSouth's financial reports over seven years (Armenakis & Lang, 2014).

### **Data Collection Procedures**

We collected data from the series of *Accounting and Auditing Enforcement Releases* (AAERs) to identify cases of financial corruption. The SEC issues AAERs during or after enforcement actions against a public company, an auditor, or an officer for auditing or accounting offenses. These releases contain rich descriptions of the nature of the offense, the effect of violations on firms' financial reports, auditors and clients perpetrating financial crimes, and outcomes of court proceedings. Following the reasoning of Karpoff et al. (2017), we focused on using the series of AAERs as a source for identifying financial corruption because the AAER database allowed us to (a) avoid type one error, which involved classifying compliant firms as financially corrupt, (b) investigate cases covering an extended period, and (c) increase the statistical power of our research design by accurately classifying the violations.

We retrieved copies of 2,585 AAERs from the SEC's Website (sec.gov; see Table 2). The SEC listed the AAERs chronologically based on the progress of investigations. We retrieved all AAERs that were issued in the period between October 18, 1999 and January 5, 2017. The earliest AAER available in the list was issued on October 18, 1999. We thoroughly reviewed AAERs to identify the name of the firm, nature of the offense, period of the violation, and penalties and sanctions assigned.

We supplemented information contained in AAERs with other sources, including news releases, reports from the US Federal Bureau of Investigation, the DOJ, and US District Courts. We searched for information on financial restatements and control variables in the firms' forms filed with the SEC using the Electronic Data Gathering, Analysis, and Retrieval system. We manually collected original information contained in annual proxy statements (i.e., DEF 14A forms) and annual reports (i.e., 10-K forms). To strengthen causal attributions, we employed a lagged design: all control variables were measured in the fiscal year before violations began (Aguinis & Edwards, 2014). For example, because financial corruption in HealthSouth lasted from 1996 until 2003, we used variables measured in 1995.

Following the reasoning of Karpoff et al. (2017), our data collection procedure involved systematic and substantial culling of irrelevant violations reported in AAERs to identify financially corrupt firms. To avoid confounding effects because of combining different types of violations into one group (Hennes et al., 2008), we investigated only cases of financial corruption. Particularly, we reviewed 2,585 AAERs and identified 823 cases of violations, which involved alleged violations in financial reports and violations unrelated to financial reporting (see Table 2). Among the 823 cases of violations, 557 did not meet our criteria for sample inclusion because of one or more of the following reasons: (a) unrelated to financial reporting; (b) accounting error; (c) non-US-based firms; (d) dismissed SEC's charges; or (e) single instances of misconduct. Thus, we identified 266 cases of financial corruption in US firms that met our selection criteria. We excluded 104 firms because we could not find financial restatement data. Additionally, we identified 60 firms, in which financial corruption began before and continued after SOX. Because our data did not allow us to accurately determine the perpetrator group size in these firms during the periods before and after SOX, we excluded these firms. Therefore, the sample of financially corrupt firms amounted to 102 (70 firms before SOX and 32 firms after SOX; see Table 2).

The period of financial corruption for these 102 firms ranged from 1989 through 2012. The duration of financial corruption was 3.2 fiscal years on average ( $SD=2.0$ ). The size was 8.8 thousand employees ( $SD=18.3$ ) and \$3.0 billion in total assets ( $SD=10.1$ ) on average. Net income was \$159.7 million on average ( $SD=598.5$ ).

**TABLE 1**  
**US LEGISLATION PROHIBITING DECEPTION IN FINANCIAL REPORTS**

Legislation	Section	Content
1934 US Securities Exchange Act	10(b)-5	It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce, or of the mails or of any facility of any national securities exchange, (a) to employ any device, scheme, or artifice to defraud, (b) to make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading, or (c) to engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person, in connection with the purchase or sale of any security.
1933 US Securities Act	17(a)	It shall be unlawful for any person in the offer or sale of any securities (including security-based swaps) or any security-based swap agreement by the use of any means or instruments of transportation or communication in interstate commerce or by use of the mails, directly or indirectly (a) to employ any device, scheme, or artifice to defraud, or (b) to obtain money or property by means of any untrue statement of a material fact or any omission to state a material fact necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading; or (c) to engage in any transaction, practice, or course of business which operates or would operate as a fraud or deceit upon the purchaser.
1934 US Securities Exchange Act	13(b)(2)(a)	Every issuer which has a class of securities registered and every issuer which is required to file reports shall make and keep books, records, and accounts, which, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the issuer.
1934 US Securities Exchange Act	13(b)(2)(b)	Every issuer which has a class of securities registered and every issuer which is required to file reports shall devise and maintain a system of internal accounting controls sufficient to provide reasonable assurances that (a) transactions are executed in accordance with management's general or specific authorization; (b) transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles or any other criteria applicable to such statements, and to maintain accountability for assets; (c) access to assets is permitted only in accordance with management's general or specific authorization; and (d) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences.
1934 US Securities Exchange Act	13(b)(5)	No person shall knowingly circumvent or knowingly fail to implement a system of internal accounting controls or knowingly falsify any book, record, or account described in Section 13(b)(2)(a) and Section 13(b)(2)(b) of the 1934 US Securities Exchange Act.

**TABLE 2**  
**NUMBER OF DISTINCT CASES OF FINANCIAL VIOLATIONS**

<b>Distinct Cases of Violations Observed in the AAERs</b>	<b>Number</b>
Violations identified in AAERs	823
Less: Violations unrelated to financial reports (e.g., illegal insider trading)	<u>124</u>
Violations in financial reports	699
Less: Accounting errors	<u>114</u>
Deception in financial reports	585
Less: Deception in non-US-based firms	<u>55</u>
Deception in US firms	530
Less: Cases with dismissed SEC's charges	<u>9</u>
Deception in US firms with assigned penalties or sanctions	521
Less: Single instances of misconduct	<u>255</u>
Financial corruption in US firms	266
Less: Firms without financial restatement data available	<u>104</u>
US financially corrupt firms with financial restatement data	162
Less: Firms committing violations before <i>and</i> after SOX	<u>60</u>
US financially corrupt firms that had financial restatement data available and committed violations before SOX	<b>70</b>
US financially corrupt firms that had financial restatement data available and committed violations after SOX	<b>32</b>

Note: 823 cases of violations were reported in 2,585 AAERs. AAER=*Accounting and Auditing Enforcement Releases*.

### Measures

#### *Independent Variable: SOX*

We operationalized *SOX* coding financially corrupt firms 0=financial corruption occurred during fiscal years ending in the period before July 30, 2002 and 1=financial corruption occurred during fiscal years ending in the period ending after July 30, 2002.

#### *Dependent Variable: Financial Restatement Magnitude*

Burks (2011) investigated stock market reactions to financial restatements after SOX and used financial restatement magnitude as a control variable in his analyses. We followed the approach of Burks in operationalizing *financial restatement magnitude*, a measure of the magnitude of financial corruption (cf. Fleming & Zyglidopoulos, 2008), by undertaking four steps. First, we retrieved values of net income from falsified financial reports and values of net income from financial reports that subsequently restated these falsified financial reports. Second, we derived absolute differences between falsified values of net income and restated values of net income. Third, we scaled the values of the absolute differences derived in the second step by total assets. Finally, we averaged the values determined in the third step across multiple restated years and used these averaged values as a measure of *financial restatement magnitude*. In our final sample, 102 financially corrupt firms continuously deceived stakeholders in financial reports and subsequently restated these reports for 3.0 consecutive fiscal years on average ( $SD=1.1$ ).

#### *Dependent Variable: Perpetrator Group Size*

We operationalized *perpetrator group size*, a measure of the extent the organizational sub-culture was corrupt (cf. Zyglidopoulos & Fleming, 2008), as the number of perpetrators who pleaded or were found guilty of violating Section 10(b)-5 or Section 17(a) or agreed to the SEC's sanctions and penalties to settle charges against them (Steffensmeier et al., 2013). In 102 cases of financial corruption in our sample, 474 people were charged with violations by the SEC or the DOJ. Among these 474 people, six had their

charges dismissed, and 12 avoided prosecution (e.g., Tomo Razmilovic, a former CEO of Symbol Technologies, Inc., was a fugitive from justice and resided in Sweden). Therefore, we excluded these 18 people from our sample. The remaining 456 people pleaded or were found guilty of the crime or agreed to SEC's sanctions and penalties to settle charges against them. We considered these 456 people as perpetrators and kept them in our sample. Among 456 perpetrators, 87 also pleaded or were found guilty of orchestrating a conspiracy to defraud shareholders because of charges brought by the DOJ. The titles of these 456 perpetrators were CFO/CAO ( $n=105$ ), CEO/COO/President ( $n=99$ ), Vice President ( $n=88$ ), Controller/Treasurer ( $n=54$ ), other managerial ( $n=44$ ), and non-managerial personnel ( $n=12$ ). Among these 456 perpetrators, 64 served on boards of directors (8 of these 64 were external). Exactly, 46 of these 456 perpetrators were external auditors.

### *Control Variables*

Prior research has demonstrated that *organizational size*, measured by the number of employees (Baucus & Near, 1991), *organizational performance*, measured by the return on assets (Mishina et al., 2010), *CEOs' stock options*, measured by the number of stock options exercised by CEOs in a given fiscal year (Zhang et al., 2008), and *CEO duality*, coded 1=CEO served as the Chair of the board of directors and 0=otherwise (O'Connor et al., 2006) positively related to misconduct in organizations. Additionally, *audit committee meetings*, measured by the number audit committee meetings in a given fiscal year (Inaam & Khamoussi, 2016), and *external audit firms' size*, coded 1=Big N auditor and 0=otherwise (Lennox & Pittman, 2010) have been shown to reduce misconduct in financial reporting. Because these six variables may also relate to financially corrupt behaviors, we used them to control for potential confounding effects by statistical analysis.

### **Analyses**

Two researchers coded independent and dependent variables for 102 cases of financial corruption in our sample. One coded 30 cases and the other coded 72 cases. To ensure that the reliability of coding between the authors was high, one of the researchers independently coded the variables for 10 randomly selected cases, which were coded by the other researcher. Following Futrell's (1995) guidelines on the use of reliability indexes, we used the Kappa technique for the independent variable and intraclass correlation for the dependent variables to assess the reliability of coding. All reliability coefficients equaled 1.0 which we considered excellent.

We used hierarchical multiple regression analysis because it allowed us to assess the importance of our independent variable after all covariates had been controlled (Cohen et al., 2003). Because we used parametric statistical analyses that are based on the assumption of normality (Cohen et al., 2003), we followed Templeton's two-step approach (2011) to normalize our non-normally distributed continuous variables. In the first step, we transformed observed values of three control variables (i.e., *organizational size*, *organizational performance*, *CEOs' stock options*) and one dependent variable (i.e., *financial restatement magnitude*) toward uniformity using a percentile rank, which resulted in uniformly distributed probabilities. In the second step, we applied the inverse-normal transformation to the values from the first step to create values consisting of normally distributed z-scores.

The final sample of 102 firms had one missing value for *organizational size* and one missing value for *audit committee meetings*. Following Graham's (2009) recommendations, we used the normal-model multiple imputation to estimate these missing values.

## **RESULTS**

In Table 3, we provided descriptive statistics and correlations among all study variables. We examined our regression models to ensure (a) normally distributed residuals, using Q-Q plots (b) no influential outliers, using Studentized residuals, (c) no multicollinearity, using variance inflation factors, (d) linear relationships between the independent and dependent variables, using plots of Studentized residuals against predicted values, (e) homoscedasticity, using plots of Studentized residuals versus

unstandardized predicted values, and (f) independence of residuals, using the Durbin-Watson test (Cohen et al., 2003).

**TABLE 3**  
**MEANS, STANDARD DEVIATIONS, AND INTERCORRELATIONS AMONG**  
**STUDY VARIABLES**

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
<i>Control variables:</i>										
1. Organizational size	.04	1.02								
2. Organizational performance	.04	1.03	.27**							
3. CEOs' stock options	.11	.80	.32**	.38**						
4. CEO duality	.66	.48	.11	-.03	.25**					
5. Audit committee meetings	2.75	2.27	.27**	.17	.18	.17				
6. External audit firms' size	.81	.39	.61**	.32**	.18	.13	.16			
<i>Independent variable:</i>										
7. SOX	.31	.47	-.21*	-.14	-.13	-.13	.18	-.38**		
<i>Dependent variables:</i>										
8. Financial restatement magnitude	.02	.97	-.23*	-.10	-.15	-.07	-.18	-.26**	-.17	
9. Perpetrator group size	4.47	3.34	.32**	.00	.31**	.03	.06	.14	-.27**	.17

Note: \* $p < .05$ , \*\* $p < .01$ .  $N = 102$ . Values of *organizational size*, *organizational performance*, *CEOs' stock options*, and *financial restatement magnitude* are in the form of normally distributed z-scores. Inter-correlations among the variables were computed using the Pearson rank correlation coefficient. Tests are two-tailed.

Results of the hierarchical multiple regression analysis for financial restatement magnitude are presented in Table 4. To assess the effects of covariates, we entered our six control variables (i.e., *organizational size*, *organizational performance*, *CEOs' stock options*, *CEO duality*, *audit committee meetings*, *external audit firms' size*) in Model 1. The model did not predict *financial restatement magnitude* ( $F(6, 95) = 1.79$ ,  $p > .05$ ;  $R^2 = .10$ ). Also, none of the control variables significantly predicted *financial restatement magnitude*. In Model 2, we added *SOX* to assess the main effect after controlling for the effects of covariates. Model 2 shows the effect of the control and independent variables on the prediction of *financial restatement magnitude* ( $F(7, 94) = 2.85$ ,  $p < .01$ ;  $R^2 = .18$ ). The addition of *SOX* to the prediction of *financial restatement magnitude* led to a statistically significant increase in  $R^2$  of .08,  $F(1, 94) = 8.41$ ,  $p < .01$ .

*Hypothesis 1* predicted that financial restatement magnitude would decrease in financially corrupt firms after versus before *SOX*. Table 4 shows that *financial restatement magnitude* significantly decreased after compared to before *SOX*,  $b = -.66$ ,  $p < .01$ . Specifically, the results indicated that while holding the control variables constant, *financial restatement magnitude* decreased by .66 of a standard deviation (.01 in original non-normalized values) after *SOX* compared to before *SOX*. In other words, when comparing financially corrupt firms before and after *SOX*, we found that the amount of falsified net income per year had decreased by \$4.8 million on average after *SOX*. Thus, *Hypothesis 1* was supported.

In Table 4, we present the results of the hierarchical multiple regression analysis for the perpetrator group size. To assess the effects of covariates, we entered our six control variables in Model 3. The model shows the effects of the control variables on the prediction of *perpetrator group size* ( $F(6, 95) = 3.72$ ,  $p < .01$ ;  $R^2 = .19$ ). In Model 4, we added *SOX* to assess the main effect after controlling for the effects of covariates. Model 4 shows the effect of the control and independent variables on the prediction of *perpetrator group size* ( $F(7, 94) = 4.41$ ,  $p < .01$ ;  $R^2 = .25$ ). The addition of *SOX* to the prediction of *perpetrator group size* led to a statistically significant increase in  $R^2$  of 0.06,  $F(1, 94) = 7.11$ ,  $p < .01$ .

**TABLE 4**  
**HIERARCHICAL MULTIPLE REGRESSION ANALYSES FOR FINANCIAL RESTATEMENT**  
**MAGNITUDE AND PERPETRATOR GROUP SIZE**

Variables	DV=Financial restatement magnitude		DV=Perpetrator group size	
	Model 1	Model 2	Model 3	Model 4
<i>Control variables:</i>				
1. Organizational size	-.05 (.12)	-.05 (.12)	.94** (.40)	.93** (.39)
2. Organizational performance	.03 (.11)	.02 (.10)	-.65** (.34)	-.69** (.33)
3. CEOs' stock options	-.10 (.14)	-.13 (.13)	1.36** (.45)	1.29** (.43)
4. CEO duality	.02 (.21)	-.05 (.21)	-.62 (.69)	-.85 (.67)
5. Audit committee meetings	-.06 (.05)	-.02 (.05)	-.03 (.15)	.08 (.15)
6. External audit firms' size	-.51 (.32)	-.81** (.32)	-.10 (1.02)	-.98 (1.04)
<i>Independent variable:</i>				
7. SOX		-.66** (.22)		-1.96** (.73)
R <sup>2</sup>	.10	.18	.19	.25
Change in R <sup>2</sup>		.08**		.06**

Note: \*\* $p < .01$ .  $N=102$ . Unstandardized regression coefficients are reported. Tests are one-tailed. Standard errors are in parentheses. Values of *organizational size*, *organizational performance*, *CEOs' stock options*, and *financial restatement magnitude* are in the form of normally distributed z-scores.

*Hypothesis 2* predicted that the perpetrator group size would decrease in financially corrupt firms after versus before SOX. Table 4 shows that *perpetrator group size* significantly decreased after compared to before SOX,  $b=-1.96$ ,  $p < .01$ . Specifically, the results indicated that while holding the control variables constant, *perpetrator group size* decreased by 1.96 after SOX compared to before SOX. In other words, when comparing financially corrupt firms before and after SOX, we found that the number of perpetrators decreased by 1.96 on average in firms after SOX. Thus, *Hypothesis 2* was supported.

## DISCUSSION

### Contributions

The implications of this study have three contributions to research and practice. First, our study complements prior research by providing empirical evidence in a natural field setting. Prior theoretical research tentatively concluded that SOX was inadequate to deter corrupt practices (see Gordon & Nazari, 2018; Rockness & Rockness, 2005). Our empirical investigation provides evidence that the Act was indeed effective to reduce financially corrupt behaviors. Second, we contribute to a discussion on whether the rational crime theory is adequate to predict and explain the impact of SOX on financial corruption by applying the theory in this context (see Fairchild et al., 2019). One perspective suggests that the theory has sufficient capacity to explain and predict the reducing effect of SOX on the crime (e.g., Nelson, 2006). An alternative perspective suggests that corrupt organizational sub-cultures suppress rational reasoning (e.g., Bazerman et al., 2006; Moore et al., 2006; Rockness & Rockness, 2005). For instance, Bazerman et al. and Moore et al. suggested that because the rational crime theory was excessively bounded by the assumption of rational decision-making, empirical evidence would not support the theory's predictions that SOX reduced financially corrupt practices. Our study contributes to the discussion by providing quantitative evidence that the rational crime theory is indeed adequate to explain and predict the impact of SOX on financial corruption. Finally, implications developed in this study have valuable insights for practice. Coates and Srinivasan (2014) concluded that "despite severe criticism, the Act and institutions it created have survived almost intact since enactment" (p. 627). Our findings

demonstrate that SOX is reaching its goal to reduce financial corruption in US firms. Thus, we recommend that policy-makers and regulators should maintain enforcement of the Act as it is.

### **Boundary Condition and Future Research**

This study has two boundary conditions. First, financial corruption we have investigated occurred within the context of US public companies and the US legal framework. Coates and Srinivasan (2014) stated that SOX had been imitated at least partially by policy-makers in countries other than the United States (e.g., the Financial Instruments and Exchange Act of 2006 enacted in Japan that is also known as J-SOX). It is unclear how the implications of this study apply to financial corruption in other countries (e.g., Japan-based Toshiba Corporation; Pfanner & Fujikawa, 2015). Second, we investigated only cases of financial corruption that were reported by the SEC and also filed restated financial reports with the SEC. The findings of our study may not generalize to cases that fall outside these selection criteria. Suggestions for future research are to investigate whether legislative acts passed in other countries reduced corrupt behaviors and use alternative selection criteria to investigate boundary conditions of this study.

### **CONCLUSION**

In this study, we investigated cases of financial corruption in large US corporations that were exposed and reported by the SEC in the period from 1989 through 2012. We provided empirical evidence that SOX effectively reduced corrupt behaviors. Namely, the financial restatement magnitude declined by 50% (0.02 before SOX compared to 0.01 after SOX). Also, the perpetrator group size decreased by 39% (5.09 before versus 3.13 after SOX). Our study has implications for existing theory and research, as well as for policy-makers and regulators.

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