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Do Major Corporate Customers Deter Supplier Misconduct?[†]

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Abstract

We examine whether major corporate customers can deter misconduct among their suppliers. Our findings indicate that firms with concentrated customer bases are less likely to commit misconduct and face lower penalties in equilibrium. We also observe a significant decline in supplier misconduct following the establishment of a major customer relationship. Furthermore, the deterrent effect of major customers is more pronounced when customer pressure to reduce supplier misconduct risk is higher. Additional analyses suggest that major customers exercise their exit option to penalize suppliers after acute violations. Overall, our results suggest that major customers play a crucial role in deterring supplier misconduct.

Keywords: Misconduct, major customer, supplier, monitoring, self-discipline.

JEL Classification: M40, M41, G32, L14.

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1. Introduction

Corporate misconduct represents an economy-wide threat to economic growth and social sustainability, and it imposes enormous costs on business, society, and the environment (Haslem, 2005; Karpoff et al., 2005; Amiram et al., 2018). This threat pertains not only to investors but also to nonfinancial stakeholders, who bear much of the downside risk over the long run. Research shows that stakeholders who control resources critical to the firm's operations have the power and legitimacy to influence corporate activities and decisions (Jensen and Meckling, 1976; Titman, 1984; Mitchell et al., 1997). We build on this literature and examine whether an important group of stakeholders—a firm's major corporate customers—can help deter that firm's misconduct.[1]

Customers are naturally concerned about their suppliers' misdeeds, given the substantial reputational and financial damage they may incur when supplier misconduct becomes public. We refer to the threat of these negative spillovers as supplier misconduct risk throughout the paper. While smaller customers often lack the information, incentives, and power to monitor their suppliers effectively, major customers are better equipped to do so, given their importance to a supplier's business. As a result, they are in a stronger position to ensure compliance with social and environmental standards and respond swiftly to violations. We hypothesize that firms with concentrated customer bases are more responsive to customer pressure to reduce misconduct than firms with more diffused customer bases.

Our hypothesis is based on the classical arguments of Jensen and Meckling (1976). In the context of borrower-lender relationships, lenders often restrict the activities of borrowers. Borrowers, in turn, are motivated to accept the imposition of such restrictions because agency costs are ultimately borne by the borrowers in equilibrium (Frankel et al., 2024). Applying this insight to the customer-supplier context, suppliers, acting as agents of major customers, bear

[1] We use the terms "major customers" and "major corporate customers" interchangeably throughout the paper.

the potential costs associated with misconduct, such as reputational damage or the loss of trade relationships, and are thus motivated to embrace monitoring and self-discipline. Therefore, we expect a negative relation between customer concentration and supplier misconduct. Note that bonding and monitoring reinforce each other—strong monitoring by customers can induce strong self-discipline by suppliers. The deterrent effect of major customers on supplier misconduct operates through both channels.

Guided by this theoretical framework, our empirical analyses proceed in four steps. First, we document the equilibrium relation between customer concentration and supplier misconduct. Second, we conduct a change analysis to examine differences in corporate misconduct between firms with newly reported major customers and matched control firms. Third, we investigate the cross-sectional heterogeneity in the effect of customer concentration. Lastly, we explore the consequences for suppliers after acute violations.

To capture corporate misconduct, we use data from the Violation Tracker database, which covers a range of violations and penalties. Following prior studies (e.g., Dhaliwal et al., 2016; Campello and Gao, 2017; Chen et al., 2022), we measure customer concentration using (1) an indicator for firms with major customers and (2) a continuous variable that reflects the fraction of a firm's total sales to all major corporate customers. We find that both measures of customer concentration are negatively associated with a firm's misconduct. Specifically, having a major customer is associated with a 2.3 percentage point lower probability of violation and 23.4% lower penalties. The economic magnitude of this effect is comparable to that of other economic factors identified in the literature, such as visits from headquarters to facilities (Heese and Pérez Cavazos, 2020) and local newspaper closures (Heese et al., 2022).

It is worth noting that we rely on recorded violations to identify misconduct, and recorded violations reflect both actual instances of misconduct and the likelihood of detection. Larger firms typically face greater scrutiny from regulators, investors, and the public, resulting in more

recorded violations even if their actual propensity for misconduct is similar to that of smaller firms. This issue is particularly relevant to our study because our data show that firms with major customers tend to be smaller, and smaller firms generally have fewer recorded violations. While this pattern could suggest that smaller firms with major customers engage in less misconduct, an alternative explanation is that larger firms are simply more likely to get caught. We take several steps to rule out this alternative interpretation, including: (1) controlling for a continuous measure of firm size in all specifications, (2) conducting robustness tests that exclude the largest firms, and (3) creating size-decile indicators for sample firms and controlling for size-decile fixed effects that address potential non-linearities in the size effects.

Despite the large set of control variables included in the model, the estimated negative association between a firm's customer base structure and its misconduct could arise due to unobserved firm characteristics that influence both variables. We address this omitted-variable bias using an instrumental variable (IV) approach, where we instrument for customer concentration using a measure of M&A intensity in customer industries (Campello and Gao, 2017). This IV approach helps mitigate potential endogeneity concerns by leveraging exogenous variation in customer concentration to explain supplier misconduct. Our inference remains unchanged under this approach.

In addition, we conduct a placebo test to further assess the validity of our findings. For each actual supplier with one or more major customers, we identify a pseudo supplier without a major customer using propensity score matching, based on observable firm characteristics such as size and industry. We do not find a significant effect of pseudo major trade relationships on a firm's misconduct. The absence of an effect in the placebo test reinforces our inference about the important role of major customers.

To further isolate the effect of customer concentration on supplier misconduct, we exploit the establishment of first-time major customer relationships. The Jensen and Meckling (1976)

perspective leads to two predictions. First, firms pursuing trade relationships with major customers will be motivated to commit less misconduct than other firms. Second, after establishing a major customer relationship, supplier firms will face increased scrutiny and reduce misconduct further. Using a change analysis around the establishment of these initial relationships, we find support for both predictions. Firms that eventually secure major customers exhibit disciplined behavior before the relationship begins, suggesting that suppliers engage in self-discipline in pursuit of major customer relationships. After the relationship is formed, these firms experience an additional reduction in misconduct, consistent with increased customer monitoring within the established relationship. These results demonstrate the roles of both supplier bonding and customer monitoring in deterring supplier misconduct.

We conduct cross-sectional tests to further corroborate our primary inference. If major customers play a crucial role in deterring supplier misconduct, the deterrent effect should be more pronounced when there is greater pressure from major customers to reduce supplier misconduct risk. We test this conjecture by exploiting settings where such pressure is predictably higher. First, we consider the Foxconn suicide scandal, which significantly raised public awareness of and concerns about supplier misconduct.[2] Second, we use the turnover of major customers' CEOs to identify suppliers facing heightened customer scrutiny and renewed pressure to meet customer requirements for reliable supply sources. Third, we argue that major customer influence, when exercised through shared directors with their suppliers, is particularly effective in reducing supplier misconduct risk. Lastly, we expect a stronger effect of major customers when they face lower switching costs, which enhances their bargaining power. In all these analyses, we find that the negative association between customer concentration and supplier misconduct strengthens when customer pressure to curb supplier misconduct is

[2] For news coverage, see *The New York Times*, "After suicides, scrutiny of China's grim factories," June 6, 2010, available at http://www.nytimes.com/2010/06/07/business/global/07suicide.html; and *The New York Times*, "Foxconn increases size of raise in Chinese factories," June 6, 2010, available at http://www.nytimes.com/2010/06/07/business/global/07foxconn.html.

stronger. These findings reinforce our inference of the deterrent effect of customer concentration, as it is difficult to identify an omitted variable that could systematically bias our results across all the contexts examined.

In the final part of the paper, we explore the consequences for suppliers after acute violations. A key premise of our argument is that suppliers face costs imposed by major customers when violations occur, especially severe ones. These costs incentivize suppliers to self-discipline in order to avoid the negative consequences. To test this premise, we compare the outcomes of firms with major customers to those without a major customer in the aftermath of a violation. Our results indicate that firms with major customers suffer a greater reduction in operating performance following high-penalty violations than those without major customers. The number of a firm's major customers also decreases after the firm commits high-penalty violations.

Our paper makes two main contributions. First, it contributes to the literature on stakeholder theory in corporate finance and accounting (Frankel et al., 2024). One stream of research examines how customer-supplier relationships affect corporate decisions, such as managerial compensation (Chen et al., 2022), capital structure (Banerjee et al., 2008), corporate disclosure (Raman and Shahrur, 2008; Hui et al., 2012; Cen et al., 2018), contract design (Costello, 2013), and tax planning (Cen et al., 2017).[3] Another stream of research focuses on customer concentration risk. Relying on major customers for a large proportion of sales increases a firm's risk and undermines its access to external financing (Dhaliwal et al., 2016; Kolay et al., 2016; Irvine et al., 2016; Campello and Gao, 2017). Our results, however, suggest that customer concentration can reduce supplier misconduct risk by creating product market incentives for suppliers to combat misconduct. Our evidence on the deterrent role of corporate

[3] There is also research examining the diffusion of various corporate policies along the supply chain, such as innovation (Chu et al., 2019) and corporate social responsibility (Dai et al., 2021). Our study differs from this line of work by focusing on how customer concentration, instead of customer behavior, affects suppliers' policies.

customers responds to the call of Ormazábal (2018, p. 225) for more research "to understand to what extent these stakeholders are an effective force to discipline managerial behavior."

Second, our paper contributes to the literature on corporate misconduct. Economic research on misconduct dates back to the seminal work of Becker (1968). More recently, a growing literature has examined how monitoring by internal and external parties deters misconduct. For instance, a firm's misconduct is affected by travel times between headquarters and facilities (Heese and Pérez Cavazos, 2020), proximity to the U.S. Securities and Exchange Commission (SEC) offices (Kedia and Rajgopal, 2011), corporate culture (Hutton et al., 2015; Liu, 2016), and corporate governance (Kedia and Philippon, 2009). When caught, culpable managers may face serious penalties (Karpoff et al., 2008). We contribute to this strand of research by showing that important trade relationships can also serve as deterrents, complementing traditional regulation (Kothari et al., 2023).

2. Hypothesis development

Firms are economically interconnected through trade relationships, where the dynamics between customers and suppliers can influence revenue and firm growth. Central to these connections is the fact that a supplier's misbehavior can hurt its customers, leading to bad publicity and reputational damage, even to boycotts or stock sell-offs.[4] Ample anecdotal evidence highlights the substantial losses firms incur due to social, ecological, or ethical problems within their supply chains. Recent examples include such industry giants as Apple, Disney, Marks & Spencer, and Walmart.[5] In each case, when a supplier is exposed for

[4] For example, in 2000, boycotts by universities affiliated with the Worker's Rights Consortium threatened up to 20% of the revenue of Gear for Sports and up to 1% of the revenue of Nike, following the revelation of labor violations by suppliers (Doorey, 2011). In 2006, Palm was forced to withdraw the Treo 650 from the European market, which led to lower revenue and a 14% decrease in stock value, because suppliers failed to meet hazardous substance directives (Lefevre et al., 2010).

[5] For news coverage, see *The New York Times*, "In China, human costs are built into an iPad," January 25, 2012, available at: https://www.nytimes.com/2012/01/26/business/ieconomy-apples-ipad-and-the-human-costs-for-workers-in-china.html; *The Guardian*, "Disney factory faces probe into sweatshop suicide claims," August 27, 2011, available at: https://www.theguardian.com/law/2011/aug/27/disney-factory-sweatshop-suicide-claims; *The Guardian*, "M&S among companies under fire over pollution claims," October 10, 2012, available at: https://www.theguardian.com/environment/2012/oct/10/marks-spencer-pollution-textile; and *The Wall Street*

mistreating workers or polluting the environment, the ensuing scandal tarnishes the customer's reputation. Consequently, potential losses, whether reputational or financial, give rise to supplier misconduct risk, incentivizing customers to monitor suppliers.

A key factor determining the extent of customer influence on suppliers is the supplier's customer base structure. Small customers often lack sufficient information, incentives, and power to monitor suppliers. This situation also makes coordination among customers costly, impeding customers from cooperating to pressure suppliers. As the concentration of the customer base increases, however, customer power grows, and collective action becomes easier, strengthening customers' ability to enforce implicit and explicit contracts. Hence, major customers can better monitor suppliers, ensure compliance with social and environmental standards, and respond more swiftly to violations. This enhanced monitoring likely encourages firms with a concentrated customer base to act more responsibly.

From the supplier's perspective, the presence of major customers and their substantial contributions to the revenue base create product market incentives for suppliers to combat misconduct. Anticipating customer scrutiny, suppliers implement measures to establish and maintain mutual trust. As a result, major customers are more likely to sustain trade relationships and offer preferential contract terms. This dynamic resembles bonding in an agency framework (Jensen and Meckling, 1976; Frankel et al., 2024). Suppliers, as agents, bear the consequences of their misconduct and are thus motivated to self-monitor and bond against misconduct by allocating resources to ensure compliance and prevent actions that could harm major customers. This self-discipline reduces agency costs for suppliers, alleviates customer concerns, and safeguards important trade relationships.

Journal, "The global garment trail: From Bangladesh to a mall near you," May 3, 2013, available at: https://www.wsj.com/articles/SB10001424127887324766604578460833869722240.

In summary, we hypothesize that major customers deter supplier misconduct through both monitoring and incentivizing supplier self-discipline. Furthermore, it is important to recognize that customer monitoring and supplier self-discipline are mutually reinforcing—effective monitoring and discipline by customers can induce strong self-disciplinary measures by suppliers.

3. Data and descriptive statistics

3.1. Sample selection

We obtain data from several sources. We begin by collecting financial information for all publicly traded U.S. firms in Compustat during our sample period from 2000 to 2022.[6] We then supplement this data with corporate misconduct information from the Violation Tracker database and customer-supplier relationship data from the Compustat Segment Customer files. To address potential outliers, we winsorize all continuous variables at the 1st and 99th percentiles. We exclude observations with missing values for the variables used in the baseline specifications. Following this procedure, our primary sample comprises 11,005 unique firms and 87,722 firm-year observations.

3.2. Variable construction and empirical specification

3.2.1. Measures of corporate misconduct

Following Heese and Pérez Cavazos (2020) and Heese et al. (2022), we construct corporate misconduct variables using data from Violation Tracker, which records both civil and criminal cases against U.S. firms.[7] To compile the dataset, Violation Tracker consolidates

[6] Our sample period starts in 2000 because it is the earliest year for which misconduct information is available from Violation Tracker.

[7] Our main inference remains unchanged when we use three alternative data sources to assess firm misconduct (untabulated). The first source is the Civil Integrated Database of the Federal Judicial Center, which covers all civil cases filed in the U.S. federal district courts since 1970. The second source is the MSCI Stats (KLD) database, which provides information on firms' ESG performance for the period 2000–2014. The third source is the Occupational Safety and Health Administration (OSHA) dataset, which tracks reportable work-related injuries and illnesses.

agency enforcement records obtained from federal regulators, including the Justice Department, and complements them with information collected on settlements announced in press releases.[8]

Violations are initially reported at the facility level and then linked to parent companies to create firm misconduct measures. Violation Tracker links facility-level violations to over 3,000 parent companies, representing more than 90% of the total penalty value. This matching enables us to aggregate facility-level violations and penalties at the firm level to assess a firm's degree of misconduct. Since we include only violations for which the parent company is publicly traded, our final sample consists of 51,295 violations perpetrated by 1,496 unique U.S. firms. Another aspect of Violation Tracker is that it reports only facilities and firms that have incurred violations during the sample period. Thus, if Violation Tracker does not report any offenses for a firm in a year, we adopt the approach of Heese and Pérez Cavazos (2020) and consider the firm to have zero violations and penalties for the year.

We use two measures of corporate misconduct in our main specifications. The first measure, *Violator*, captures the incidence of misconduct. It is an indicator variable that equals one for firm-year observations with at least one violation, and zero otherwise. While this indicator is straightforward and captures whether a sample firm is a violator, it does not reflect the severity of misconduct. Hence, our second measure, *Penalties*, is the natural logarithm of one plus the total penalties of a firm in a year, with penalties converted to 2005 U.S. dollars using the GDP deflator from World Bank Data. The higher the value of the penalties, the more severe the violations.[9]

Corporate wrongdoing manifests in various forms, such as employment discrimination, environmental pollution, and safety violations. According to the classification defined by Violation Tracker, our final sample encompasses 75 offense categories, with the 10 most

[8] Violation Tracker removes violations where the penalty or settlement is lower than $5,000.
[9] Our results are robust to an alternative measure of misconduct based on the number of violations (untabulated).

common categories listed in Table 1. The most prevalent offense is workplace safety violations, accounting for 37.3% of the total number of violations. The most prominent offense in terms of total penalty amount is environmental violations, representing 15.9 % of the total penalties.

3.2.2. Measures of customer concentration

We construct our main explanatory variables using information on customer-supplier relationships from the Compustat Segment Customer database. This information is publicly available because SFAS No. 14 (before 1997) and SFAS No. 131 (after 1997) require firms to disclose all customers that account for 10% or more of total firm revenues. In many cases, firms not only disclose the existence of major customers but also their names. However, these names are often abbreviated, and firms sometimes use slightly different abbreviations for the same customer across different years, as noted by Fee and Thomas (2004). Since we require financial information about major customers for some of our tests, we manually match the customers to Compustat following the procedure outlined by Fee and Thomas (2004) and Cohen and Frazzini (2008). Specifically, we first use a name-based matching algorithm to identify the most likely customer firm matches from the lists of historical CRSP and Compustat firm names. We then verify them manually using information from LexisNexis and SEC filings to help determine the identity of the customer.[10]

The focus of our paper is the relation between a concentrated customer base and supplier misconduct.[11] We use two measures to capture the extent to which a customer base is concentrated. The first measure, *Major customer*, is an indicator variable that equals one if a supplier discloses at least one major corporate customer that accounts for 10% or more of its

[10] One limitation of the analysis requiring customer identity is that firms can selectively disclose this information (Li et al., 2018). This caveat applies to only a subset of our results, i.e., Panel C of Table 3, Table 4, and Tables 6 and 7. The other analyses do not require customer identity information.

[11] A firm can also have government entities as major customers. We find little support for a negative relation between a concentrated government customer base and misconduct (untabulated). This insignificant result can be due to low power, as only 5.75% of the firm-years in our sample report at least one major government customer. Another possible explanation is that the government does not need to be a major customer to monitor suppliers (Samuels, 2021).

annual revenues, and zero otherwise. For the second measure, we follow Banerjee et al. (2008) and Dhaliwal et al. (2016) and define *Major customer sales* as the fraction of a supplier's annual total sales captured by all major corporate customers. Both variables are annual measures of a firm's customer base.

3.2.3. Empirical specification

To examine the relation between customer concentration and corporate misconduct at the supplier-year level, we use the following ordinary least squares (OLS) regression model:

$$Misconduct_{i,t} = \alpha + \beta\ Customer\ concentration_{i,t} + \gamma\ Control_{i,t} + Industry_i + Year_t + \varepsilon_{i,t}, \quad (1)$$

where *i* indexes firm and *t* indexes time. The constructions of *Misconduct* and *Customer concentration* are discussed previously. Following the literature (e.g., Heese and Pérez-Cavazos, 2020; Heese et al., 2022), we include a vector of firm characteristics as control variables that affect a firm's misconduct, including firm size (*Size*), leverage ratio (*Leverage*), growth opportunities (*Tobin's Q*), cash balance (*Cash*), return on assets (*ROA*), stock return (*Return*), R&D investment (*R&D*), and capital investment (*Capex*).[12] *Industry* and *Year* represent industry and year fixed effects, respectively, which are included to account for differences in corporate wrongdoing across industries and over time. Our results should therefore be interpreted as a cross-sectional comparison between firms within the same industry.[13]

[12] We consider various additional controls, and our results remain robust (untabulated). The first set of controls includes several board and CEO characteristics, such as the percentage of independent directors on the board, board size; the CEO's age, gender, and tenure; and whether the CEO also chairs the board. The second set of controls relates to several customer characteristics, including customer size, customer advertising intensity, and customer misconduct. We do not include these controls in the main specification to avoid substantial sample attrition.

[13] Like prior studies (e.g., Dhaliwal et al., 2016; Campello and Gao, 2017; Cen et al., 2017), we do not use firm fixed effects in our regressions due to limited within-firm variation in the customer concentration variables. We also confirm that the results are not materially affected when we replace industry and year fixed effects with industry-year fixed effects that control for time-varying industry conditions.

3.3. Descriptive statistics

Panel A of Table 2 reports summary statistics of the variables used in our baseline analysis. Approximately 11.2% of firm-year observations have a violation on record during the sample period. The mean penalty per firm-year is $1.213 million. In 35.2% of our sample observations, firms report that at least one major customer accounts for 10% or more of their annual revenues. On average, sales to all major customers account for 15.3% of total revenues. For the subset of suppliers that disclose at least one major customer, mean sales to all major customers account for 43.5% of these suppliers' total revenues. These statistics are comparable to those of Dhaliwal et al. (2016) and Campello and Gao (2017).

As a preliminary analysis of the deterrent effect of major customers, in Panel B of Table 2, we compare means across subsamples of firm-years with and without major customers. Consistent with our conjecture, firms with major customers are less likely to commit violations and on average pay lower penalties. With respect to the control variables, firms with major customers are smaller and less leveraged, exhibit higher Tobin's Q and stock returns but lower ROA, have more cash, and spend more on capital investment and R&D.

Similarly, Panel C of Table 2 compares means across subsamples of firm-years with and without violations. Firms with violations are larger, exhibit lower Tobin's Q and stock returns but higher ROA, have less cash, and spend more on capital investment and less on R&D. Overall, the differences highlight the importance of controlling for these variables in explaining corporate misconduct, which we do in our regression analyses.

Panel D of Table 2 reports pairwise correlation coefficients. It is evident that the correlations between the independent variables are relatively small, indicating little multicollinearity. Notably, there is a negative correlation between customer concentration and corporate misconduct. The correlations between *Major customer* and the two misconduct

variables, namely, *Violator* and *Penalties*, are -0.094 and -0.023, respectively. The corresponding correlations for *Major customer sales* are -0.110 and -0.020, respectively.

Table 2 also highlights the role of firm size in our context. Firms with major customers tend to be smaller on average, consistent with the expectation that larger firms have more diversified customer bases. At the same time, larger firms are more frequently involved in violations, which may reflect both a higher propensity for misconduct and the heightened scrutiny they attract. These patterns are reinforced by the correlation matrix, where firm size is positively correlated with *Violator* and *Penalties*, but negatively correlated with *Major customer* and *Major customer sales*. This observation suggests that size-related factors, such as regulatory attention and stakeholder scrutiny, may influence detected violation rates. Given that recorded violations depend on both the commission and detection of misconduct, it is crucial to account for the potential size effect to ensure that, while firm size influences recorded violations, it does not drive our findings—a concern we address carefully in our empirical analyses.

4. Main results

4.1. Baseline analyses

Our baseline analyses proceed in four steps. First, we document the association between customer concentration and supplier misconduct. Second, we conduct a series of robustness checks to address concerns that our results may be driven by firm size, industry, or specific violation categories. Third, we use an instrumental variable approach to address potential endogeneity concerns. Fourth, we conduct a placebo test to further validate our findings.

4.1.1. OLS results

We first examine the relation between a supplier's customer base concentration and its violations. Columns 1 and 2 of Panel A, Table 3 report the results from estimating Equation (1) with *Violator* as the dependent variable, and columns 3 and 4 report the results with *Penalties*

as the dependent variable. The *t*-statistics shown in parentheses below each point estimate in this table and all subsequent tables are based on standard errors clustered at the firm level. The coefficient estimates on both measures of customer concentration, *Major customer* and *Major customer sales*, are negative and significant at the 1% level across all regressions, suggesting that firms with concentrated customer bases are less likely to commit violations and pay lower penalties.[14]

The effects are economically meaningful, indicating that having a major customer is associated with a 2.3 percentage point lower probability of violation and 23.4% ($e^{-0.267} - 1$) lower penalties. The magnitude of these effects is comparable to those documented in prior studies. For example, Heese and Pérez Cavazos (2020) document that the introduction of new airline routes, which reduce travel time between headquarters and facilities, decreases misconduct penalties by 23.4%. Heese et al. (2022) find that the closure of a local newspaper leads to a 15.2% increase in misconduct penalties.

The coefficients on the control variables are generally consistent with prior research. For example, firm size relates positively to the incidence and severity of violations, consistent with the arguments that large, complex firms commit more misconduct and that large firms with deep pockets are more likely to face lawsuits, leading to subsequent investigations and detection of misconduct.

4.1.2. Robustness checks

Despite the extensive set of control variables included in the main specification, we conduct a series of robustness checks to further address concerns that our results may be driven by firm size, industry, or specific violation categories.

[14] Our results with *Major customer sales* in columns 2 and 4 remain robust after restricting the sample to firms with at least one major customer (untabulated).

First, as noted earlier in the discussion of the summary statistics in Table 2, it is important to account for firm size in our context, as firms with major customers tend to be smaller, and smaller firms generally have fewer recorded violations. To ensure that the documented relation is not driven by the largest firms—which likely attract the most regulatory scrutiny—we conduct an analysis excluding these firms (defined as those in either the largest decile or tercile), and our results remain robust (untabulated).

Relatedly, although our baseline model controls for a continuous measure of firm size, there remains a concern that the relation between firm size and misconduct may be nonlinear. To address this concern, we create size-decile indicators for sample firms and include size-decile fixed effects in the model to control for potential nonlinear relations between size and recorded misconduct. Panel B of Table 3 presents the results. While the estimated effects of major customers on supplier misconduct are slightly smaller in magnitude than in the baseline results, our inference remains unchanged.

Second, firms from different industries likely differ systematically in customer base due to industry characteristics. For example, firms in manufacturing industries are more likely to have major customers, whereas firms in retail, consumer products, financial, and utility industries may be less likely to do so. These effects are likely subsumed by the industry fixed effects in our model. To further alleviate concerns that our results are driven by particular industries, we show that our results continue to hold (untabulated) when excluding manufacturers or firms in retail, consumer products, financial, and utility industries.

Third, as shown in Table 1, corporate wrongdoing manifests in various forms, such as employment discrimination, environmental pollution, and safety violations. To ensure that our results are not driven by a particular type of violation, we classify these violations into three broad categories: employee-related, environmental, and other, and redo the estimation. In an

untabulated analysis, we find that the effect of major customers is pervasive across these three categories of violations.

4.1.3. Instrumental variable approach

While the OLS regression results are robust, these analyses are subject to potential endogeneity concerns. In particular, unobserved firm characteristics can simultaneously affect both a firm's customer base structure and its misconduct. To mitigate these concerns, we employ an instrumental variable (IV) approach to isolate a plausibly exogenous component of customer concentration and use it to explain supplier misconduct.

Following Campello and Gao (2017), we instrument for a firm's customer concentration using the intensity of mergers and acquisitions in its customers' industries (downstream M&As), denoted as *Customer industry M&A*. Prior research indicates that horizontal mergers within the same industry typically lead to stronger buyers and a more concentrated customer base (Bhattacharyya and Nain, 2011; Campello and Gao, 2017). Accordingly, we expect M&A intensity in customer industries to increase the concentration of the supplier's customer base, thus satisfying the relevance condition of the IV approach. This condition is confirmed in the first-stage regression results shown below.

The validity of this approach also depends on the exclusion restriction, which requires that downstream M&As affect supplier misconduct only through its impact on customer concentration. This assumption is plausible because downstream M&A activity consolidates customer industries and enhances customer firms' bargaining power, yet it is beyond the supplier's control and unlikely to directly influence supplier misconduct. Therefore, downstream M&A activity is expected to be independent of supplier misconduct, except through the customer–supplier relationship, supporting the exclusion restriction.

To construct the instrument, we first obtain firms' annual costs of M&A from Compustat (Item AQC). The industry-level five-year mean M&A intensity is then measured as the average

M&A intensity of an industry (two-digit SIC) over the past five years, where industry M&A intensity is computed as the aggregate M&A costs divided by the aggregate sales across all firms within that industry in a year. Finally, for a supplier *i* (and its major customer *j*) in year *t*, *Customer industry M&A* is the weighted sum of the five-year M&A intensity across the industries to which the firm's major customers belong, weighted by the supplier's percentage sales to each major customer. The variable is defined as follows:

$$Customer\ industry\ M\&A_{it} = \sum_{j=1}^{n} \%Sales_{ijt} \times Industry\ average \left(\frac{M\&A\ costs}{Sales}\right)_{jt}$$

The sample for this analysis is substantially reduced compared to the baseline analysis, as it includes only supplier firms that disclose at least one major corporate customer. This restriction is essential because the instrument relies on trade relationships with major customers to calculate industry M&A intensity and corresponding weights. Moreover, as noted by Ellis et al. (2012) and Li et al. (2018) and confirmed in our sample, some firms in the Compustat database that report having major customers do not reveal the identities of these customers. Without this information, we cannot determine the industries of these major customers. Therefore, our sample for the IV approach excludes supplier firms that do not disclose their major customers' identities.

Column 1 of Panel C, Table 3 presents the results of the first-stage regression in which the dependent variable is *Major customer sales*.[15] The explanatory variables include the instrument and the same controls as in the baseline model of Panel A, Table 3. Consistent with the rationale behind the instrument, the results show that a supplier's customer concentration is significantly and positively correlated with the customer industries' M&A intensity. The reported *F-statistics* are also quite high, rejecting the null hypothesis that the instrument is weak. Columns 2 and 3 report the results for the second-stage regressions in which dependent

[15] The two stages are jointly estimated using a two-stage least squares (2SLS) estimator.

variables are the misconduct measures. The variable of interest is the variable with the predicted value of *Major customer sales* from the first-stage regression. Both regressions confirm the significant and negative effect of customer concentration on supplier misconduct.

4.1.4. Placebo test

To further address the concern that our documented relation might be spurious, we consider hypothetical customer-supplier relationships by replacing actual suppliers with matched pseudo suppliers and examine whether such relationships can explain firms' recorded violations. Using propensity score matching, we identify, for each actual supplier with one or more major customers, a pseudo supplier without a major customer that exhibits no significant differences in other observable characteristics.

We first estimate the probability that a firm-year has at least one major customer using a logit regression that includes the same set of controls and fixed effects as the regressions in Panel A of Table 3.[16] Each firm-year with at least one major customer is matched with the firm-year without a major customer that has the closest propensity score.[17] We then create hypothetical customer-supplier relationships by replacing actual suppliers with matched pseudo suppliers and re-estimate our baseline regressions. The results are tabulated in Panel D of Table 3. Note that the sample for this analysis is smaller than that for the baseline analysis because actual suppliers are excluded. We observe no significant effect of pseudo major trade relationships on a firm's misconduct, demonstrating that actual major trade relationships indeed matter.

[16] The matching approach ensures that actual suppliers with major customers and their matched pseudo-suppliers exhibit no statistically significant differences across key observable factors, including size, profitability, leverage, investments, liquidity, and growth prospects. The lack of statistically significant differences supports the validity of our matching procedure.

[17] To ensure that actual and pseudo suppliers are appropriate, we require that the maximum difference (i.e., the caliper) in the propensity score between each firm-year with a major customer and that of its match does not exceed 0.01 in absolute value. On a related note, we select the nearest neighbor without replacement in the reported analysis. Our results are robust to allowing replacement.

4.2. Change analysis using first-time major customer relationship establishment

Our previous results are based on a level analysis, where we compare firms with major customers to those without major customers. Here, we conduct a change analysis to investigate how transitioning from not having a major customer to having one affects supplier misconduct. We define relationship establishment as the point when a sample firm reports a major customer in year *t* for the first time in the Compustat Segment Customer database, with the relationship lasting at least three years (i.e., years *t*, *t*+1, and *t*+2).[18] A firm is classified as treated if it reports a new major customer.

For our analysis, we track both treated and matched control firms from two years before (year *t*–2) to two years after (year *t*+2) relationship establishment. We match each treated firm with control firms that meet the following criteria: (1) the firm does not report a new major customer during the estimation window, (2) the firm reports a new major customer after *t*+2 within the sample period, and (3) the firm belongs to the same size quintile within the same industry as the treated firm in year *t*–1. The combined set of treated and matched control firms sharing the same estimation window (i.e., year *t*–2 to year *t*+2) is labeled as a cohort. We then stack all such cohorts together to form the testing sample and estimate the average treatment effect of relationship establishment.

Table 4 presents the results, where the main variable of interest is the interaction term between *Treat* and *Post*. *Treat* is an indicator variable that equals one if a firm reports a new major customer during the estimation window and zero otherwise. *Post* is an indicator variable that equals one for the years in the post-event period (i.e., years *t*+1 and *t*+2) and zero for the pre-event period (i.e., years *t*–1 and *t*–2). We exclude the observation for year *t* to mitigate the effect of potential confounding factors. Two notable observations emerge. First, the coefficient

[18] One caveat is that the established major customer relationship is not necessarily new. A supplier can start to disclose an incumbent customer that has just crossed the threshold for disclosure.

estimates on *Treat* are negative and significant, aligning with the notion that dependent suppliers discipline themselves to ensure compliance even before relationship establishment. Second, the negative and significant coefficients on the interaction term suggest that customer monitoring further reduces supplier misconduct. Specifically, in column 1, the coefficient estimate on *Treat* suggests that firms pursuing trade relationships with major customers have a 3.8 percentage point lower probability of committing misconduct than matched control firms, and the coefficient estimate on *Treat* × *Post* indicates that establishing major customer relationships is associated with a further reduction in misconduct by 1.9 percentage points. Our inference remains the same in column 2 when we measure misconduct intensity using *Penalties*. These results in Table 4 demonstrate the interplay of bonding and monitoring in shaping the deterrent effect of major customers.

5. Heterogeneous effects of customer concentration on supplier misconduct

We argue that customer concentration deters supplier misconduct by creating product market incentives for suppliers to adopt better practices. If the observed negative relation between customer concentration and misconduct is indeed driven by customer-supplier linkages, this relation should be more pronounced when customer pressure to address supplier misconduct is higher. To substantiate this argument, we explore settings that provide variation in customer pressure to reduce supplier misconduct risk. Specifically, we examine whether the effect of customer concentration on supplier misconduct varies with: (1) customer awareness about supplier misconduct, (2) the degree of scrutiny suppliers face from major customers, (3) major customer influence through shared directors with suppliers, and (4) the costs for major customers to switch suppliers. These analyses further corroborate our main inference by raising the threshold for alternative explanations. For an omitted variable to account for our findings, it must also explain and be consistent with all our cross-sectional results.

5.1. The impact of customer awareness

Our first analysis exploits one of the most tragic workplace incidents over the past decade. In 2010, many workers committed suicide at factories operated by Foxconn Technology in China.[19] These facilities produced consumer electronic devices for Hewlett-Packard, Dell, and, most famously, Apple.[20] There were 18 reported suicide attempts that year alone and 14 confirmed deaths.[21] These shocking events caused a media sensation worldwide. News headlines such as "Apple's Foxconn embarrassment," "The dark side of shiny Apple products," and "Apple's labor problems" became commonplace in the international press, tainting the company's public image. Labor activists threatened a boycott against Apple products.

Amid mounting public pressure, Apple asked an independent group, the Fair Labor Association (FLA), to assess the working conditions and labor practices of its large suppliers, including Foxconn, Quanta, and Pegatron.[22] Following this initiative, many other multinational high-tech companies, such as Hewlett-Packard, Dell, Amazon, IBM, Samsung, Sony, and Acer, also started their own supply chain inspections.[23] According to FLA president Auret van

[19] Reuters, "For Apple suppliers, loose lips can sink contracts," February 17, 2010, available at https://www.reuters.com/article/us-apple-asia-secrecy/for-apple-suppliers-loose-lips-can-sink-contracts-idUSTRE61G3XA20100217.

[20] *The Washington Post*, "The human cost of an iPhone," March 2, 2018, available at https://www.washingtonpost.com/outlook/the-human-cost-of-an-iphone/2018/03/02/5d76555e-0b7e-11e8-8890-372e2047c935_story.html.

[21] *The Guardian*, "Life and death in Apple's forbidden city," June 18, 2017, available at https://www.theguardian.com/technology/2017/jun/18/foxconn-life-death-forbidden-city-longhua-suicide-apple-iphone-brian-merchant-one-device-extract.

[22] *The Guardian*, "Apple supplier audit begins with Foxconn plant," February 13, 2012, available at https://www.theguardian.com/technology/2012/feb/13/apple-supplier-audit-foxconn.

[23] Following the scandal, Dell emphasized its expectation that suppliers should "employ the same high standards it does in its own facilities." The company enforces these standards through a variety of tools, including the Electronics Industry Code of Conduct, business reviews with suppliers, self-assessments and audits. HP also conveyed a similar stance, stating that they investigate "the Foxconn practices that can be associated with these tragic events." In light of mounting customer pressure, Foxconn pledged to raise worker salaries, offer counselling to its employees, and outsource its living arrangements. See, e.g., CBS News, "Apple, Dell, HP looking into Foxconn factory suicides," May 26, 2010, available at: https://www.cbsnews.com/news/apple-dell-hp-looking-into-foxconn-factory-suicides/; The New York Times, "A Chinese Factory Outsources Worker Dorms," June 25, 2010, available at: https://www.nytimes.com/2010/06/26/technology/26foxconn.html/.

Heerden, those inspections were "unprecedented" in both "scale and scope."[24] Indeed, through the international media, the high-profile worker suicides raised severe concerns about supplier responsibility and aroused societal awareness and activism calling for better practices along supply chains not only in China but worldwide.

Customers' heightened awareness of supplier misconduct risk and the accompanying calls for sustainable supply chains created downward pressure on supplier misconduct after the scandal. To examine the effect of increased customer awareness on the effect of customer concentration, we estimate the following model:

$$Misconduct\_Employee_{i,t} = \alpha + \beta\ Customer\ concentration_{i,t} + \mu\ Post\ Foxconn_t \cdot Customer\ concentration_{i,t} + \gamma\ Control_{i,t} + Industry_i + Year_t + \varepsilon_{i,t}, \quad (2)$$

where $Misconduct\_Employee_{i,t}$ and $Customer\ concentration_{i,t}$ are proxies for misconduct and customer concentration for firm *i* in year *t*. Since the scandal relates directly to employees, we construct two misconduct variables based solely on employee-related violations. *Violator_Employee* is an indicator variable set to one if a firm has at least one employee-related violation, and zero otherwise. *Penalties_Employee* is the natural logarithm of one plus the total value of penalties for employee-related violations in 2005 dollars. *Post Foxconn* is an indicator variable that equals one from 2010 onward and zero otherwise. The sample for this analysis consists of six years from three years before to three years after the Foxconn suicides. The same set of controls and fixed effects as in our baseline model are included. The coefficient of the variable of interest, μ, captures the effect of the Foxconn incident on the association between a firm's customer base and its misconduct.

Table 5 presents the regression results, with *Violator_Employee* as the dependent variable in Panel A and *Penalties_Employee* in Panel B. Columns 1 and 2 in each panel report the results from estimating Equation (2). The coefficient estimates on the interaction terms,

[24] BBC, "Apple factories to face independent inspections," March 8, 2012, available at https://www.bbc.co.uk/news/technology-17015824.

Post Foxconn × *Major customer* and *Post Foxconn* × *Major customer sales*, are all negative and significant at the 1% level, suggesting that the Foxconn scandal strengthens the negative relation between customer concentration and supplier misconduct.[25]

To ensure that the observed effect of the Foxconn scandal is not driven by firm size, we include an additional control for *Post Foxconn* × *Size* in columns 3 and 4 of both panels. The coefficient estimates on *Post Foxconn* × *Size* across all specifications are significantly positive, consistent with the Foxconn scandal increasing the detection likelihood of misconduct for large firms. Importantly, the coefficient estimates on *Post Foxconn* × *Major customer* and *Post Foxconn* × *Major customer sales* remain significantly negative in both panels.

We note that the effect of the Foxconn scandal is consistent with two non-mutually exclusive explanations: (1) individual suppliers changing their behavior in response to the scandal and (2) increased customer scrutiny of supplier misconduct risk. Both explanations can work together to foster product market deterrence. Our empirical analyses primarily document the equilibrium relation before and after the scandal.

5.2. The impact of customer scrutiny

Our second analysis examines how the replacement of a major customer's CEO affects the supplier's misconduct. The replacement of a customer firm's CEO can significantly affect relationships with suppliers. The suppliers that get along well with the outgoing CEO are not guaranteed to be compatible with the new one. Thus, once in office, a successor CEO is likely to reassess the firm's trade relationships and renegotiate contracts and sales terms. Consistent with disruptions brought about by customer CEO turnover posing risks for suppliers, Intintoli et al. (2017) show that following the departure of a major customer's CEO, the supplier loses substantial sales to that customer and the likelihood of the trade relationship ending increases.

[25] In untabulated analyses, we account for the trend in the change of misconduct over time by introducing an additional control, *Time*, defined as the fiscal year for a given observation minus the first year in the testing sample. Our inferences remain unchanged.

Applying these insights into our context, we argue that strategic and operational shifts following the replacement of a major customer's CEO affect a supplier's propensity to commit misconduct. Essentially, the turnover of customer firms' CEOs allows us to identify a subset of suppliers under heightened scrutiny. These suppliers also face increased pressure to meet customer expectations for reliable supply sources, particularly in light of the potential threat of contract renegotiation. Therefore, we expect that the replacement of a major customer's CEO increases customer monitoring via the review of trade relationships.

To examine the relation between customer CEO turnover and supplier misconduct, we estimate the following model:

$$\begin{aligned} Misconduct_{i,t} = {} & \alpha + \beta\ Major\ customer\ with\ CEO\ turnover_{i,t} \\ & + \mu\ Major\ customer\ without\ CEO\ turnover_{i,t} + \gamma\ Control_{i,t} \\ & + Industry_i + Year_t + \varepsilon_{i,t}. \end{aligned} \tag{3}$$

We split the indicator variable *Major customer* in Equation (1) into two categories: *Major customer with CEO turnover* is an indicator variable that equals one if a firm has at least one major customer that replaces its CEO in a given year and zero otherwise; *Major customer without CEO turnover* is an indicator variable that equals one if a firm has at least one major customer but none of its major customers replace the CEO in a given year and zero otherwise. We define CEO turnover as a firm-year *t* when the ExecuComp database lists a different CEO than in year *t*–1, and then we link the identified CEO turnovers of major customers to their suppliers. *Control* represents the same controls as in the baseline model.

Our analysis includes suppliers without major customers as the benchmark group. This inclusion enables us to assess whether specific characteristics of major customers (e.g., CEO turnover) amplify or mitigate their influence on supplier misconduct, relative to suppliers without major customers. This comparative approach allows us to examine the incremental effects of these characteristics.[26]

[26] In untabulated analysis, we restrict the sample to firms with major customers and find that major customer CEO turnover is associated with a lower level of misconduct by the supplier.

Table 6 presents the regression results, where the dependent variables are the violator indicator and the penalty measure. The coefficient estimates on *Major customer with CEO turnover* and *Major customer without CEO turnover* are negative and significant at the 1% level. Moreover, the coefficient estimate on *Major customer with CEO turnover* is significantly more negative than that on *Major customer without CEO turnover*, consistent with the notion that the increased scrutiny and pressure for supplier accountability associated with customer CEO turnover induce suppliers to curtail misconduct. [27]

5.3. The impact of customer influence through board connections

A third facet of customer pressure to reduce supplier misconduct risk is customer influence. We examine whether board connections via shared directors (i.e., directors who serve on both the customer's and supplier's boards) amplify the effect of major customers. If having superior information and enhanced influence through shared directors prompt major customers to pay closer attention to misconduct, then we expect the deterrent effect of customer concentration on supplier misconduct to be greater in the presence of shared directors.

We test this conjecture in the framework of the baseline model by splitting the indicator variable *Major customer* into two categories: *Major customer with shared director* is an indicator variable that equals one if a firm shares at least one director with its major customers and zero otherwise; *Major customer without shared director* is an indicator variable that equals one if a firm has at least one major customer but does not share any director with its major customers and zero otherwise. We obtain director information from BoardEx. As in the previous analysis, we use suppliers without major customers as a benchmark group to assess the incremental effect of shared directors between the major customer and the supplier.[28]

[27] To alleviate the concern that our findings are driven by the largest firms, which are less likely to have major customers, we exclude the largest decile of firms from the sample. Untabulated results suggest that our inferences remain unchanged.

[28] In untabulated analysis, we restrict the sample to firms with major customers and find that having shared directors with a major customer is associated with a lower level of supplier misconduct.

Table 7 reports that the coefficient estimates on *Major customer with shared director* and *Major customer without shared director* are negative and significant at the 1% level. Moreover, the coefficient estimate on *Major customer with shared director* is more negative than that on *Major customer without shared director*, consistent with the notion that increased influence and pressure through shared directors amplify the negative effect of customer concentration on misconduct.

5.4. The impact of customer switching costs

A fourth facet has to do with the switching costs of major customers. A major customer can deter supplier misconduct by threatening to switch suppliers. In this context, low switching costs enhance the customer's bargaining power and make its interests more salient. We create an indicator variable to capture situations in which customers face low switching costs. *High similarity* equals one if a supplier firm is in the top quintile of *TNIC Similarity* in a year and zero otherwise, where *TNIC Similarity* is a measure of total product similarity between a supplier firm and its rivals in a year, developed by Hoberg and Phillips (2016).[29] When a supplier sells products of higher similarity, there would be more alternative suppliers for its major customers to choose from. High product similarity allows customers to easily switch to other suppliers.

Table 8 presents the regression results in which we interact *High similarity* with our customer concentration measures. The dependent variable is the violator indicator in Panel A and penalties in Panel B. In each panel, columns 1 and 2 present the main specifications, while columns 3 and 4 include an additional control for the interaction between *High similarity* and *Size*. Across all specifications, the coefficient estimates on the interaction terms, *High similarity* × *Major customer* and *High similarity* × *Major customer sales*, are negative and

[29] Data spanning the period 2000–2021 are obtained from the Hoberg-Phillips data library at https://hobergphillips.tuck.dartmouth.edu/.

significant at the 1% level. Suppliers with major customers facing lower switching costs have fewer violations and lower penalties, and these findings are not driven by size effects.

6. Consequences for suppliers after acute violations

The results thus far provide evidence that firms with major customers are associated with less corporate misconduct than those without, suggesting that major customers play a crucial role in deterring supplier misconduct. To better understand this deterrent effect, we investigate the mechanisms through which major customers exert their influence, focusing specifically on the consequences for suppliers with major customers following acute violations.

A central premise of our argument is that major customers impose costs on suppliers when they commit violations, thereby discouraging misconduct. For this deterrence to be effective, major customers must have the power to enforce meaningful punishments on suppliers who fail to act in their interests. However, the effectiveness of such punishments diminishes if individual customers cannot coordinate their actions. The concentration of customer power in the hands of major customers helps mitigate this coordination problem, reinforcing the deterrent effect. Unlike a diffused customer base, major customers can more effectively impose severe punishments through market actions, creating strong incentives for suppliers to self-discipline and avoid adverse consequences.

To test this conjecture, we examine whether firms with major customers experience worse operating performance following violations compared to those without, particularly in cases involving severe violations. This analysis allows us to assess the extent to which major customers can penalize suppliers for misconduct and, in turn, evaluate the suppliers' incentives to self-discipline. We estimate the following model using a sample restricted to firm-year observations with at least one violation:

$$ROA\ or\ Sales\ growth_{i,t} = \alpha + \beta\ Major\ customer_{i,t-1} + \gamma\ High\ penalties_{i,t-1} + \mu\ High\ penalties_{i,t-1} \cdot Major\ customer_{i,t-1} + \theta\ Low\ penalties_{i,t-1} + \varphi\ Low\ penalties_{i,t-1} \cdot Major\ customer_{i,t-1} + \rho\ Control_{i,t-1} + Industry_i + Year_t + \varepsilon_{i,t}, \quad (4)$$

where the dependent variable measures violator firms' operating performance in the following year. *ROA* is earnings before interest and taxes divided by total assets, and *Sales growth* is the percentage change in sales. We create two dummy variables based on a firm's total value of penalties in a year to account for the possibility that the effect of violation severity on firm performance is not monotonic. *High penalties* (*Low penalties*) equals one if a firm is in the top (bottom) tercile of *Penalties* and zero otherwise. Moreover, to avoid the mechanical relation between *Sales growth* and the fraction of sales to major customers resulting from the variation in sales volume, for this test we rely on the *Major customer* dummy to capture customer concentration. The variables of interest in this analysis are the interaction terms between *Major customer* and the penalty dummies.

Columns 1 and 3 of Table 9 present the results from estimating Equation (4). Focusing on the variable of interest, we find that the coefficient estimates on *High penalties* × *Major customer* are negative and significant at the 5% level or better in both specifications. In contrast, the coefficient estimates on *Low penalties* × *Major customer* are statistically insignificant. This pattern aligns with our prediction. Following violations with high penalties, firms with major customers experience greater reduction in *ROA* and *Sales growth* compared to those without. These findings suggest that only violations with severe penalties attract sufficient attention to trigger reputational damage among customers. As a result, major customers, concerned about their own reputation, take actions to penalize suppliers after an acute violation. In columns 2 and 4 of Table 9, we augment Equation (4) by incorporating interactions between firm size and the penalty indicators. Our inference remains unchanged.

In Panel B of Table 9, we examine the effect of a firm's acuate violations on the number of major customers. The results in column 1 indicate that high-penalty violations significantly increase the risk of losing major customers, leading to fewer major customers post violation.[30] This reduction becomes more pronounced in column 2 when we narrow our focus to firm-years experiencing violations for the first time in our sample.[31]

Together, these findings suggest that major customers exercise their exit option to penalize suppliers after severe violations, imposing significant costs that incentivize supplier self-discipline and reinforce the deterrent effect.

7. Conclusion

We examine whether major customers deter corporate misconduct. Our findings reveal that firms with concentrated customer bases exhibit less misconduct and incur lower penalties. These results remain robust across various alternative specifications and different approaches addressing potential endogeneity concerns. Moreover, the effects are more pronounced when customer pressure to reduce supplier misconduct is higher, consistent with the idea that a concentrated customer base can motivate suppliers to behave better. Furthermore, we show that suppliers with major customers experience a greater decline in operating performance following high-penalty violations compared to those without, and a firm's severe violations result in a loss of major customers.

Collectively, our results demonstrate that major corporate customers play a significant role in deterring supplier misconduct. An important implication is that imposing stricter regulations on large corporations can have a cascading regulatory effect, influencing smaller firms across the supply chain, even those operating in different jurisdictions. We encourage future research to utilize novel settings to explore and validate this implication.

[30] One caveat is that losing a major customer does not necessarily mean the relationship terminates completely; it can be the case that the sales amount to this customer just falls below the threshold for disclosure.
[31] The *p*-values for the Wald statistics testing the null hypothesis of equal coefficients on *High penalties* and *Low penalties* in columns 1 and 2 are 0.014 and 0.001, respectively.

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Appendix. Variable definitions

Variable	Definition	Data source
Corporate misconduct measures		
Violator	An indicator variable set to one if a firm has at least one violation in a given year, and zero otherwise.	Violation Tracker
Penalties	Natural logarithm of one plus the total value of penalties for violations in 2005 dollars (based on the U.S. GDP deflator from the World Bank Data).	Violation Tracker
Customer concentration measures		
Major customer	An indicator variable set to one if a firm has at least one corporate customer that accounts for at least 10% of its total sales, and zero otherwise.	Compustat Segments
Major customer sales	The fraction of a firm's total sales to all corporate customers that account for at least 10% of total sales.	Compustat Segments
Control variables		
Size	Natural logarithm of total assets in constant 2005 dollars (based on the U.S. GDP deflator from the World Bank Data).	Compustat
Leverage	Debt in current liabilities plus long-term debts divided by total assets.	Compustat
Tobin's Q	Total assets plus the market value of equity minus the book value of equity divided by total assets.	Compustat
Cash	Cash and marketable securities divided by total assets.	Compustat
ROA	Operating income before depreciation divided by total assets.	Compustat
Return	Annual stock return over the year.	Compustat
R&D	R&D expenditures divided by sales.	Compustat
Capex	Capital expenditures divided by total assets.	Compustat

Table 1. Sample composition

This table presents the distribution of violations and penalties in our sample by offense type. The sample includes violations from firm-years covered by both Compustat and Violation Tracker from 2000 to 2022. For brevity, we list the ten most common offense categories and sort these categories from highest to lowest by their percentage of total violations.

Offense type	No. of violations	% of Total	Penalties ($m)	% of Total
Workplace safety or health violation	19,143	37.3%	614.11	0.3%
Railroad safety violation	11,329	22.1%	120.81	0.1%
Environmental violation	8,427	16.4%	35,370.47	15.9%
Aviation safety violation	2,926	5.7%	249.50	0.1%
Wage and hour violation	2,160	4.2%	6,301.56	2.8%
Labor relations violation	1,386	2.7%	375.51	0.2%
Employment discrimination	654	1.3%	1,874.56	0.8%
Consumer protection violation	648	1.3%	8,594.18	3.9%
Insurance violation	633	1.2%	656.49	0.3%
Nursing home violation	547	1.1%	25.80	0.0%

Table 2. Descriptive statistics

This table presents summary statistics and the correlation matrix. The sample includes firm-years from the intersection of Compustat, Compustat Segments, and Violation Tracker for the period from 2000 to 2022. Panel A reports summary statistics for the variables used in our baseline analysis. For each variable, we report the number of observations, mean, standard deviation, 25th percentile, median, and 75th percentile. Panel B presents a univariate analysis of firms with and without major customers. Panel C presents a univariate analysis of firms with and without violations. Panel D reports the correlation matrix. All variables are defined in the Appendix.

Panel A. Summary statistics

	Obs.	Mean	Std. dev.	25th	Median	75th
Main variables						
Violator	87,722	0.112	0.315	0.000	0.000	0.000
Penalties (million $)	87,722	1.213	18.809	0.000	0.000	0.000
Major customer	87,722	0.352	0.478	0.000	0.000	1.000
Major customer sales	87,722	0.153	0.266	0.000	0.000	0.210
Customer concentration for firms with a major customer						
Major customer sales	30,861	0.435	0.280	0.185	0.364	0.640
Control variables						
Size	87,722	5.440	2.665	3.617	5.573	7.360
Size (million $)	87,722	3,598.694	11,616.228	37.235	263.211	1,571.817
Leverage	87,722	0.304	0.394	0.028	0.207	0.409
Tobin's Q	87,722	2.777	4.313	1.053	1.485	2.528
Cash	87,722	0.209	0.232	0.034	0.114	0.309
ROA	87,722	-0.076	0.518	-0.042	0.077	0.141
Return	87,722	0.188	1.012	-0.332	-0.005	0.334
R&D	87,722	0.305	1.145	0.000	0.000	0.083
Capex	87,722	0.045	0.059	0.009	0.025	0.055

Panel B. Univariate analysis for firms with and without major customers

Variables	Firms with major customers		Firms without major customers		Difference
	Obs.	Mean	Obs.	Mean	
Violator	30,861	0.071	56,861	0.134	-0.062***
Penalties	30,861	0.798	56,861	1.575	-0.777***
Size	30,861	4.849	56,861	5.760	-0.911***
Leverage	30,861	0.275	56,861	0.320	-0.045***
Tobin's Q	30,861	2.872	56,861	2.726	0.146***
Cash	30,861	0.258	56,861	0.183	0.076***
ROA	30,861	-0.105	56,861	-0.060	-0.045***
Return	30,861	0.205	56,861	0.179	0.026***
R&D	30,861	0.386	56,861	0.261	0.125***
Capex	30,861	0.048	56,861	0.043	0.005***

Panel C. Univariate analysis for firms with and without violations

Variables	Firms with violations		Firms without violations		Difference
	Obs.	Mean	Obs.	Mean	
Size	9,792	8.406	77,930	5.067	3.339***
Leverage	9,792	0.309	77,930	0.303	0.006
Tobin's Q	9,792	1.695	77,930	2.913	-1.218***
Cash	9,792	0.094	77,930	0.224	-0.130***
ROA	9,792	0.122	77,930	-0.101	0.223***
Return	9,792	0.133	77,930	0.195	-0.062***
R&D	9,792	0.017	77,930	0.342	-0.324***
Capex	9,792	0.052	77,930	0.044	0.009***

Panel D. Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) *Violator*	1.000											
(2) *Penalties* (million $)	0.182	1.000										
(3) *Major customer*	-0.094	-0.023	1.000									
(4) *Major customer sales*	-0.110	-0.020	0.781	1.000								
(5) *Size*	0.395	0.111	-0.163	-0.204	1.000							
(6) *Leverage*	0.005	-0.000	-0.054	-0.017	-0.173	1.000						
(7) *Tobin's Q*	-0.089	-0.015	0.016	0.083	-0.432	0.432	1.000					
(8) *Cash*	-0.176	-0.027	0.155	0.240	-0.264	-0.220	0.180	1.000				
(9) *ROA*	0.135	0.025	-0.041	-0.120	0.545	-0.414	-0.635	-0.202	1.000			
(10) *Return*	-0.019	-0.006	0.012	0.019	-0.063	-0.012	0.138	0.054	0.029	1.000		
(11) *R&D*	-0.089	-0.015	0.052	0.167	-0.192	0.017	0.196	0.426	-0.390	0.004	1.000	
(12) *Capex*	0.046	-0.007	0.038	0.038	0.041	0.043	0.006	-0.175	0.021	-0.032	-0.066	1.000

Table 3. Major customers and supplier misconduct

This table examines whether a concentrated customer base impacts a supplier's recorded misconduct. Panel A presents the OLS regression results. The sample includes firm-years from the intersection of Compustat, Compustat Segments, and Violation Tracker for the period from 2000 to 2022. The dependent variables are as follows. *Violator* is an indicator variable set to one if a firm has at least one violation, and zero otherwise. *Penalties* is the natural logarithm of one plus the total value of penalties for violations in 2005 dollars. The main explanatory variables of interest are the two customer concentration measures. *Major customer* is an indicator variable set to one if a firm has at least one corporate customer that accounts for at least 10% of its total sales, and zero otherwise. *Major customer sales* is the fraction of a firm's total sales to all corporate customers that account for at least 10% of total sales. Panel B repeats our baseline regressions, replacing the continuous measure of firm size with size-decile fixed effects. Panel C presents estimates using the instrumental variable method based on two-stage least square (2SLS) panel regressions. This analysis is based on firm-years with major customers whose names are disclosed by their suppliers, drawn from the intersection of Compustat, Compustat Segments, and Violation Tracker from 2000 to 2022. The instrumental variable, *Customer industry M&A*, is a measure of the intensity of merger and acquisition (M&A) activities in customers' industries. The same set of control variables as in Panel A are included. Panel D investigates the impact of pseudo customer-supplier relationships. The sample includes firm-years where we replace actual suppliers with matched pseudo suppliers, again drawn from the intersection of Compustat, Compustat Segments, and Violation Tracker from 2000 to 2022. *Major customer* $_{pseudo}$ and *Major customer sales* $_{pseudo}$ are the customer concentration measures derived from the actual suppliers and assigned to their matched pseudo suppliers. All other variables are defined in the Appendix. Continuous variables are winsorized at the 1st and 99th percentiles, and dollar values are expressed in 2005 dollars. All specifications include industry and year fixed effects. Industries are defined based on the two-digit Standard Industrial Classification (SIC) codes. The *t*-statistics reported in parentheses are based on the heteroscedasticity-robust firm-clustered standard errors. ∗∗∗, ∗∗, and ∗ indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. OLS results

Dependent variable	*Violator*		*Penalties*	
	(1)	(2)	(3)	(4)
Major customer	-0.023***		-0.267***	
	(-5.21)		(-5.17)	
Major customer sales		-0.039***		-0.442***
		(-5.90)		(-5.65)
Size	0.050***	0.050***	0.622***	0.622***
	(31.86)	(31.87)	(29.52)	(29.50)
Leverage	-0.002	-0.002	-0.031	-0.026
	(-0.51)	(-0.42)	(-0.58)	(-0.50)
Tobin's Q	0.004***	0.004***	0.052***	0.053***
	(11.37)	(11.43)	(11.23)	(11.29)
Cash	-0.067***	-0.064***	-0.703***	-0.680***
	(-9.27)	(-8.98)	(-8.06)	(-7.79)
ROA	-0.056***	-0.056***	-0.745***	-0.748***
	(-14.99)	(-14.99)	(-15.67)	(-15.68)
Return	0.001**	0.001**	0.018**	0.018**
	(2.01)	(2.00)	(2.32)	(2.31)
R&D	-0.009***	-0.008***	-0.111***	-0.104***
	(-8.06)	(-7.63)	(-8.24)	(-7.83)
Capex	-0.068**	-0.067**	-1.107***	-1.107***
	(-2.25)	(-2.24)	(-3.09)	(-3.09)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	87,722	87,722	87,722	87,722
Adjusted R^2	0.222	0.222	0.228	0.228

Panel B. Controlling for size-decile fixed effects

Dependent variable	*Violator*		*Penalties*	
	(1)	(2)	(3)	(4)
Major customer	-0.019***		-0.228***	
	(-4.66)		(-4.77)	
Major customer sales		-0.035***		-0.394***
		(-5.56)		(-5.50)
Leverage	-0.015***	-0.015***	-0.180***	-0.177***
	(-3.68)	(-3.61)	(-3.66)	(-3.60)
Tobin's Q	0.000	0.001*	0.005	0.006
	(1.64)	(1.77)	(1.47)	(1.62)
Cash	-0.038***	-0.036***	-0.368***	-0.345***
	(-5.93)	(-5.58)	(-4.82)	(-4.50)
ROA	0.004	0.004	0.044	0.043
	(1.62)	(1.58)	(1.42)	(1.38)
Return	0.001	0.001	0.009	0.009
	(1.27)	(1.28)	(1.20)	(1.21)
R&D	-0.002**	-0.002*	-0.028**	-0.021*
	(-2.41)	(-1.86)	(-2.49)	(-1.93)
Capex	0.036	0.037	0.262	0.266
	(1.26)	(1.28)	(0.78)	(0.79)
Size-decile FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	87,722	87,722	87,722	87,722
Adjusted R^2	0.261	0.261	0.276	0.276

Panel C. Instrumental variable approach

Dependent variable	*Major customer sales*	*Violator*	*Penalties*
	(1)	(2)	(3)
Customer industry M&A	5.447***		
	(13.04)		
Major customer sales		-0.078*	-0.958**
		(-1.90)	(-2.00)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	9,046	9,046	9,046
Adjusted R^2	0.317	0.190	0.191
F-statistics	170.17		

Panel D. Placebo test

Dependent variable	*Violator*		*Penalties*	
	(1)	(2)	(3)	(4)
Major customer $_{pseudo}$	0.001		0.028	
	(0.37)		(0.54)	
Major customer sales $_{pseudo}$		-0.004		-0.014
		(-0.73)		(-0.19)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	56,861	56,861	56,861	56,861
Adjusted R^2	0.237	0.237	0.244	0.244

Table 4. Major customer relationship establishment

This table examines the impact of major customer relationship establishment on supplier misconduct. The stacked sample consists of treated and matched control firms, from the intersection of Compustat, Compustat Segments, and Violation Tracker from 2000 to 2022. Relationship establishment is defined as the point when a firm reports a major customer in year *t* for the first time in the Compustat Segment Customer database, with the relationship lasting at least three years (i.e., years *t*, *t*+1, and *t*+2). A firm is treated if it reports a new major customer. We match each treated firm with control firms that meet the following criteria: (1) the firm does not report a new major customer during the estimation window, (2) the firm reports a new major customer after *t*+2 within the sample period, and (3) the firm belongs to the same size quintile within the same industry as the treated firm in year *t*-1. *Treat* is an indicator variable that equals one if a firm reports a new major customer during the estimation window and zero otherwise. *Post* is an indicator variable that equals one for the years in the post-event period (i.e., years *t*+1 and *t*+2) and zero for the pre-event period (i.e., years *t*–1 and *t*–2). We exclude the observation for year *t* to mitigate the effect of potential confounding factors. Each regression in this table includes the same set of control variables as Table 3, along with cohort-industry and cohort-year fixed effects. Industries are defined based on the two-digit SIC codes. Continuous variables are winsorized at the 1st and 99th percentiles, and dollar values are expressed in 2005 dollars. The *t*-statistics reported in parentheses are based on the heteroscedasticity-robust firm-clustered standard errors. ∗∗∗, ∗∗, and ∗ indicate significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	*Violator*	*Penalties*
	(1)	(2)
Treat	-0.038***	-0.410**
	(-2.97)	(-2.54)
Treat × *Post*	-0.019**	-0.251**
	(-2.32)	(-2.48)
Controls	Yes	Yes
Cohort-Industry FE	Yes	Yes
Cohort-Year FE	Yes	Yes
N	29,387	29,387
Adjusted R^2	0.229	0.241

Table 5. The impact of the Foxconn suicide scandal

This table tests the effect of the Foxconn suicide scandal. The sample includes firm-years from the intersection of Compustat, Compustat Segments, and Violation Tracker for the three years before and the three years after the scandal. In Panel A, the dependent variable, *Violator_Employee*, is a binary indicator set to one if a firm has at least one employee-related violation and zero otherwise. In Panel B, the dependent variable, *Penalties_Employee*, is the natural logarithm of one plus the total penalties for employee-related violations, measured in 2005 dollars. *Major customer* is an indicator variable set to one if a firm has at least one corporate customer that accounts for at least 10% of its total sales, and zero otherwise. *Major customer sales* is the fraction of a firm's total sales to all corporate customers that account for at least 10% of total sales. *Post Foxconn* is an indicator variable that equals one from 2010 onward. *Size* is the natural logarithm of total assets, measured in constant 2005 dollars. Each regression in this table includes the same set of control variables and industry and year fixed effects as in our baseline regressions. Industries are defined based on the two-digit SIC codes. All other variables are defined in the Appendix. Continuous variables are winsorized at the 1st and 99th percentiles, and dollar values are expressed in 2005 dollars. The *t*-statistics reported in parentheses are based on the heteroscedasticity-robust firm-clustered standard errors. ∗∗∗, ∗∗, and ∗ indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Likelihood of employee-related violations

Dependent variable	*Violator_Employee*			
	(1)	(2)	(3)	(4)
Major customer	-0.002		-0.005	
	(-0.44)		(-0.95)	
Post Foxconn × Major customer	-0.017***		-0.011*	
	(-2.80)		(-1.88)	
Major customer sales		-0.002		-0.008
		(-0.29)		(-1.09)
Post Foxconn × Major customer sales		-0.029***		-0.015*
		(-3.20)		(-1.81)
Post Foxconn × Size			0.006***	0.006***
			(5.16)	(5.13)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	22,200	22,200	22,200	22,200
Adjusted R^2	0.132	0.132	0.133	0.133

Panel B. Penalties for employee-related violations

Dependent variable	*Penalties_Employee*			
	(1)	(2)	(3)	(4)
Major customer	-0.049		-0.086	
	(-0.84)		(-1.48)	
Post Foxconn × Major customer	-0.277***		-0.191***	
	(-4.09)		(-2.90)	
Major customer sales		-0.051		-0.136
		(-0.59)		(-1.61)
Post Foxconn × Major customer sales		-0.451***		-0.251***
		(-4.45)		(-2.61)
Post Foxconn × Size			0.096***	0.096***
			(6.61)	(6.61)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	22,200	22,200	22,200	22,200
Adjusted R^2	0.173	0.173	0.175	0.175

Table 6. The impact of CEO turnovers of major customers

This table examines whether the replacement of a major customer's CEO affects its dependent supplier's degree of misconduct. The sample includes firm-years from the intersection of Compustat, Compustat Segments, and Violation Tracker for the period from 2000 to 2022. The main variables are as follows. *Violator* is an indicator variable set to one if a firm has at least one violation, and zero otherwise. *Penalties* is the natural logarithm of one plus the total value of penalties for violations in 2005 dollars. *Major customer with CEO turnover* is an indicator variable set to one if a firm has at least one major customer that replaces its CEO in a given year, and zero otherwise. *Major customer without CEO turnover* is an indicator variable that equals one if a firm has at least one major customer but none of its major customers replace the CEO in a given year, and zero otherwise. Each regression in this table includes the same set of control variables and industry and year fixed effects as in our baseline regressions. Industries are defined based on the two-digit SIC codes. Continuous variables are winsorized at the 1st and 99th percentiles, and dollar values are expressed in 2005 dollars. For brevity, we report only the coefficients on the turnover variables. The *t*-statistics reported in parentheses are based on the heteroscedasticity-robust firm-clustered standard errors. ∗∗∗, ∗∗, and ∗ indicate significance at the 1%, 5%, and 10% levels, respectively. Reflecting the signed nature of the predictions, the test for equal major-customer effects is one-sided.

Dependent variable	*Violator*	*Penalties*
	(1)	(2)
Major customer with CEO turnover	-0.035***	-0.412***
	(-4.51)	(-4.37)
Major customer without CEO turnover	-0.021***	-0.252***
	(-4.99)	(-5.00)
Controls	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Equal major-customer effects (*p*-value)?		
Major customer with CEO turnover =		
Major customer without CEO turnover	0.014	0.016
N	87,722	87,722
Adjusted R^2	0.223	0.228

Table 7. The impact of shared directors

This table examines how shared directors affect the relation between customer concentration and misconduct. The sample includes firm-years from the intersection of Compustat, Compustat Segments, and Violation Tracker for the period from 2000 to 2022. The main variables are as follows. *Violator* is an indicator variable set to one if a firm has at least one violation, and zero otherwise. *Penalties* is the natural logarithm of one plus the total value of penalties for violations in 2005 dollars. *Major customer with shared director* is an indicator variable that equals one if a firm shares at least one director with its major customers, and zero otherwise. *Major customer without shared director* is an indicator variable that equals one if a firm has at least one major customer but does not share any director with its major customers, and zero otherwise. Each regression in this table includes the same set of control variables and industry and year fixed effects as in our baseline regressions. Industries are defined based on the two-digit SIC codes. All other variables are defined in the Appendix. Continuous variables are winsorized at the 1st and 99th percentiles, and dollar values are expressed in 2005 dollars. The *t*-statistics reported in parentheses are based on the heteroscedasticity-robust firm-clustered standard errors. ∗∗∗, ∗∗, and ∗ indicate significance at the 1%, 5%, and 10% levels, respectively. Reflecting the signed nature of the predictions, the test for equal major-customer effects is one-sided.

Dependent variable	*Violator*	*Penalties*
	(1)	(2)
Major customer with shared director	-0.064***	-0.841***
	(-3.27)	(-3.60)
Major customer without shared director	-0.022***	-0.260***
	(-5.09)	(-5.06)
Controls	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Equal major-customer effects (*p*-value)?		
Major customer with shared director = *Major customer without shared director*	0.014	0.005
N	87,722	87,722
Adjusted R^2	0.223	0.228

Table 8. The impact of customer switching costs

This table examines how customer switching costs affect the relation between customer concentration and misconduct. The sample includes firm-years from the intersection of Compustat, Compustat Segments, and Violation Tracker from 2000 to 2021. The analysis ends in 2021 because the product similarity data is available only up to that year. The main variables are as follows. *Violator* is an indicator variable set to one if a firm has at least one violation, and zero otherwise. *Penalties* is the natural logarithm of one plus the total value of penalties for violations in 2005 dollars. Panel A reports regression results where the dependent variable is *Violator*, while Panel B reports regression results where the dependent variable is *Penalties*. *Major customer* is an indicator variable set to one if a firm has at least one corporate customer that accounts for at least 10% of its total sales, and zero otherwise. *Major customer sales* is the fraction of a firm's total sales to all corporate customers that account for at least 10% of total sales. *High similarity* equals one if a firm is in the top quintile of *TNIC Similarity* in a year and zero otherwise, where *TNIC Similarity* is a measure of total product similarity between a supplier firm and its rivals in a year, developed by Hoberg and Phillips (2016). *Size* is the natural logarithm of total assets, measured in constant 2005 dollars. Each regression in this table includes the same set of control variables and industry and year fixed effects as in our baseline regressions. Industries are defined based on the two-digit SIC codes. All other variables are defined in the Appendix. Continuous variables are winsorized at the 1st and 99th percentiles, and dollar values are expressed in 2005 dollars. The *t*-statistics reported in parentheses are based on the heteroscedasticity-robust firm-clustered standard errors. ∗∗∗, ∗∗, and ∗ indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Likelihood of violations

	Violator			
	(1)	(2)	(3)	(4)
Major customer	-0.013**		-0.011*	
	(-2.12)		(-1.90)	
High similarity × Major customer	-0.035***		-0.038***	
	(-3.46)		(-3.81)	
Major customer sales		-0.024**		-0.021*
		(-2.14)		(-1.88)
High similarity × Major customer sales		-0.045***		-0.051***
		(-2.95)		(-3.46)
High similarity	-0.032***	-0.036***	0.003	-0.001
	(-3.66)	(-4.49)	(0.17)	(-0.05)
High similarity × Size			-0.005	-0.005
			(-1.50)	(-1.53)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	70,559	70,559	70,559	70,559
Adjusted R^2	0.229	0.229	0.229	0.229

Panel B. Penalties for violations

	Penalties			
	(1)	(2)	(3)	(4)
Major customer	-0.136**		-0.129*	
	(-1.97)		(-1.87)	
High similarity × Major customer	-0.453***		-0.472***	
	(-3.57)		(-3.78)	
Major customer sales		-0.247*		-0.228*
		(-1.89)		(-1.77)
High similarity × Major customer sales		-0.572***		-0.608***
		(-3.08)		(-3.43)
High similarity	-0.333***	-0.395***	-0.122	-0.180
	(-3.01)	(-3.85)	(-0.46)	(-0.70)
High similarity × Size			-0.032	-0.033
			(-0.66)	(-0.68)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	70,559	70,559	70,559	70,559
Adjusted R^2	0.237	0.237	0.237	0.237

Table 9. Consequences for suppliers after acute violations

This table examines the consequences for suppliers with major customers following acute violations. In Panel A and column 1 of Panel B, the sample includes firm-years with at least one violation, drawn from the intersection of Compustat, Compustat Segments, and Violation Tracker for the period from 2000 to 2022. In column 2 of Panel B, the sample includes firm-years that experience violations for the first time in our sample, again drawn from the intersection of Compustat, Compustat Segments, and Violation Tracker for the period from 2000 to 2022. The main variables are as follows. *ROA* is earnings before interest and taxes divided by total assets in the year after the violations. *Sales growth* is the percentage change in sales in the year after the violations. *Major customer* is an indicator variable set to one if a firm has at least one corporate customer that accounts for at least 10% of its total sales, and zero otherwise. *Num. of customers* is the number of major customers in the year after the violations. *High penalties* (*Low penalties*) is set to one if a firm is in the top (bottom) tercile of *Penalties* and zero otherwise. *Size* is the natural logarithm of total assets, measured in constant 2005 dollars. Each regression in this table includes the same set of control variables and industry and year fixed effects as in our baseline regressions, except for columns 1 and 2 of Panel A, where *ROA* is the dependent variable and is therefore not used as a control. Industries are defined based on the two-digit SIC codes. All other variables are defined in the Appendix. Continuous variables are winsorized at the 1st and 99th percentiles, and dollar values are expressed in 2005 dollars. The *t*-statistics reported in parentheses are based on the heteroscedasticity-robust firm-clustered standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Operating performance

Dependent variable	*ROA*		*Sales growth*	
	(1)	(2)	(3)	(4)
High penalties	-0.003	-0.010	0.003	-0.011
	(-1.03)	(-0.54)	(0.47)	(-0.27)
High penalties × Major customer	-0.015**	-0.015**	-0.098***	-0.097***
	(-2.35)	(-2.25)	(-6.75)	(-6.72)
Low penalties	0.003	-0.000	0.006	0.016
	(1.51)	(-0.00)	(1.06)	(0.48)
Low penalties × Major customer	0.003	0.003	-0.015	-0.016
	(0.61)	(0.65)	(-1.19)	(-1.20)
Major customer	0.006	0.006	0.024**	0.024**
	(1.36)	(1.29)	(2.38)	(2.36)
High penalties × Size		0.001		0.001
		(0.42)		(0.34)
Low penalties × Size		0.000		-0.001
		(0.17)		(-0.32)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	8,880	8,880	8,880	8,880
Adjusted R^2	0.321	0.321	0.166	0.165

Panel B. The number of major customers

Dependent variable	*Num. of major customers*	
	(1)	(2)
High penalties	-0.071***	-0.175***
	(-3.22)	(-3.35)
Low penalties	0.022	0.010
	(1.02)	(0.20)
Controls	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
N	8,880	1,419
Adjusted R^2	0.257	0.257