Regulatory Costs and Vertical Integration: Evidence from Supply Chain Disclosure Regulations

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Abstract: I study whether and how supply chain disclosure regulations shape corporate boundaries, particularly, vertical integration decisions. I employ a 2010 California disclosure mandate for firms' efforts to eradicate human trafficking and slavery in supply chains. I hypothesize that by imposing potential costs on focal firms including litigation risk, reputational costs, and supply chain information acquisition and monitoring costs, this disclosure regulation shifts cost-benefit tradeoffs of firms' make-or-buy decisions and incentivizes firms to enhance vertical integration within supply chains. Difference-in-differences analyses demonstrate that following the regulation, treated firms make more vertical acquisitions, especially upstream, relative to control firms. The effect is concentrated among firms facing greater stakeholder pressure (e.g., plaintiffs, consumers, NGOs, and shareholder activists) and firms with higher sourcing risk or asset specificity. Also, following the regulation, treated firms increase overall vertical integration and reduce outsourcing to suppliers. In addition, treated firms exhibit more voluntary disclosure of vertical integration activities, business segments, product similarity to upstream firms, and strategic alliance activity. Collectively, my findings suggest that supply chain disclosure regulations incentivize firms to become more vertically integrated within supply chains.

Keywords: regulatory costs; vertical integration; vertical acquisitions; supply chain; real effects of disclosure.
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"By facilitating up-to-date, end-to-end supply chain information, vertical integration offers broad transparency to customers… This transparency is crucial to provide a secure product supply, product quality as well as safety to avoid labor-related reputational risks."

~ Harald Dutzler, Managing Director and Partner at PwC - Strategy& (2019)

"Vertical integration gives businesses a firm hold on their end-to-end supply chain… a transparent supply network has become a central element to running an ethical and sustainable business. Today, consumers and investors alike are becoming increasingly attuned to a business' operations behind-the-scenes. Retailers should expect scrutiny into their chains from an environmental, animal welfare and ethical perspective… Switching to a more vertically integrated model could act as a step towards becoming a more purpose-driven and stakeholder-focused organisation."

~ Elliott Goldstein, Managing Partner at The MBS Group (2021)

1 Introduction

In this study, I examine whether and how supply chain disclosure regulations shape corporate boundaries, in particular, firms' vertical integration decisions. My research question is motivated by recent policy attempts to promote supply chain transparency and two separate streams of literature. Supply chain transparency regulations are emerging throughout the world, such as the trio of modern slavery acts in California, the United Kingdom, and Australia which require companies to disclose their actions to mitigate the risk of human trafficking and modern slavery in supply chains, as well as conflict minerals legislations and supply chain due diligence regulations.[1] First, setting firm boundaries especially along the supply chain (i.e., make-or-buy decisions) as well as exerting sufficient control over the production processes is not only a fundamental economic question of the theory of the firm, but also a key organizational decision choice managers face. A set of theoretical and empirical studies seek to explain firms' vertical integration decisions since Coase's (1937) seminal paper (e.g., Williamson 1975, 1979, 1985; Klein 1983, 2005; Grossman and Hart 1986; Tadelis 2002; Alfaro et al. 2019; Frésard et al. 2020).

[1] Examples of conflict minerals legislations include Section 1502 of U.S. Dodd Frank Act and the EU Conflict Minerals Regulation 2014. Examples of supply chain due diligence regulations include the French Duty of Vigilance Act 2017, the Dutch Child Labour Due Diligence Act 2019, the German Corporate Due Diligence in Supply Chains Act 2021, and the Norwegian Transparency Act 2021. Recently, the U.S. Congress has proposed several of bills regarding supply chain transparency, including H.R.6279 - Business Supply Chain Transparency on Trafficking and Slavery Act of 2020 and H.R.5539 - Cosmetic Supply Chain Transparency Act of 2021.

In a recent survey by HSBC (2020), 67% of businesses said their top priority was to increase control of the supply chain, including via owning more of the supply chain (i.e., vertical integration). Second, recent work suggests that disclosure regulations impose costs on firms and induce changes in corporate decisions. For instance, Bushee and Leuz (2005) find that the SEC reporting mandate results in significant costs to Over-The-Counter Bulletin Board (OTCBB) firms and force them off the OTCBB, Aghamolla and Thakor (2022) and Yost (2023) document that proprietary costs of disclosure discourage firms from going public, and Andreicovici et al. (2023) find evidence of reputational costs imposed by the SEC's extraction payments disclosure rule. Combining these two streams of literature together, I hypothesize that by shifting the cost-benefit tradeoffs of firms' make-or-buy decisions, specifically, increasing the costs of outsourcing, supply chain disclosure regulations incentivize firms to enhance vertical integration within supply chains.

To test my prediction, I focus on the adoption of the California Transparency in Supply Chains Act of 2010 (the California Act hereafter), which requires companies to disclose information regarding their efforts to eradicate human trafficking and slavery within their supply chains. There are a series of regulatory costs that supply chain disclosure regulations, in general, and the California Act, in particular, potentially impose on focal firms. First, as interest groups can access and use the focal firm's supply chain disclosure to exert public pressure on the focal firm to modify its practices, the focal firm faces increased litigation risk and intervention. Specifically, by giving customers and other interest groups the ability to know what companies are doing to eliminate violations of human and labor rights in supply chains, the California Act heightens focal firms' litigation risk arising from the "legal responsibility for suppliers' treatment of workers" and has in fact triggered a series of class action lawsuits filed against firms accused of making

misleading public statements on their anti-slavery efforts (e.g., Pickles and Zhu 2013).[2,3] In the case of deficient supply chain disclosure, focal firms face potential intervention from activist groups including NGOs and shareholder activists.[4] Second, as suppliers' misbehavior may reflect poorly on focal firms and lead to reputational damages (e.g., consumer backlash, stock sell-offs) (Chen et al. 2023), the California Act provides great visibility into human right issues to consumers and inflates focal firms' reputational costs when suppliers violate labor laws (Pickles and Zhu 2013).[5] Third, it is costly for focal firms to gather supply chain information and monitor suppliers through supply chain contracts, audits, and assurance, due to incomplete contracting and misaligned incentives among stakeholders along diversified supply chains (e.g., Jenson and Meckling 1976; Klein 1983; Gietzmann 1996; Sodhi and Tang 2019; Kraft and Zheng 2021) as well as a short period of time the California Act gave firms to update practices and ensure compliance: only 15 months lapsed between when the California Act was signed into law, October 2010, and when it became effective, January 1, 2012. Last, proprietary costs could arise from

[2] For instance, Gibson Dunn, a global law firm, commented on the California Act that "it is expected that interest groups will access and use a company's disclosure to put public pressure on the company to modify its practices. Companies seeking to influence suppliers' practices will also want to be mindful of the possibility of litigation asserting that the company's efforts made it a 'joint employer' with legal responsibility for suppliers' treatment of workers." (https://www.gibsondunn.com/california-enacts-law-requiring-many-businesses-to-disclose-efforts-to-eradicate-forced-labor-in-their-supply-chains/) Pickles and Zhu (2013) argue that because of the California Act, "companies that cannot account for the provenance of their products may soon find themselves losing competitiveness to companies that can. They may also be exposed to costly litigation."

[3] In August 2015, a consumer filed a class action lawsuit against Costco and its Thai seafood supplier, CP Foods, alleging that Costco knew of slave labor in its prawn supply chain in Thailand but did not disclose this information to consumers. In May 2019, the plaintiff Renee Walker filed a class action lawsuit against Nestle, claiming that child slaves on West African farms harvested cocoa for Nestle, even though it labeled its products as "sustainably sourced." San Diego federal judge James Lorenz refused to grant Nestle's motion to dismiss this lawsuit in March 2022.

[4] For instance, KnowTheChain, an NGO committed to helping address forced labor risk within global supply chains, argued that Amphenol was not compliant with either the UK Modern Slavery Act or the California Act and gave the company an overall score of only 9 out of 100 in its *2018 Benchmarking Report on Forced Labor in the /CT Sector*. And shareholders raised a proxy statement requiring Amphenol to enhance its supply chain transparency to help investors "gauge if the company is sufficiently addressing this serious risk to the company and to workers." (https://www.sec.gov/Archives/edgar/data/820313/000104746919002292/a2238401zdef14a.htm)

[5] For example, a group of pet food purchasers argued that "they were misled by Nestle's failure to disclose the use of slave labor in its supply chain, and would not have purchased the pet food had they known the truth." (https://labourexploitation.org/news/lawsuits-giving-some-bite-to-mandatory-reporting-on-slavery-in-supply-chains/)

disclosing supply chain information, such as the provenance of a product (Ellis et al. 2012; Pickles and Zhu 2013; Ott et al. 2017; Cen et al. 2018; Li et al. 2018; Chen et al. 2022).[6] Thus, to offset the increased costs of outsourcing to suppliers induced by the California Act, I expect firms to vertically integrate, including via vertical acquisitions.

My main hypothesis is not without tension. First, instead of increasing vertical integration to control supply chains, firms could respond to the California Act in other ways including exerting more efforts in supply chain due diligence and monitoring, or switching to suppliers with good labor performance (Dai et al. 2021; She 2022; Bisetti et al. 2023; Lu et al. 2023). Second, focal firms are unlikely to make vertical acquisitions when antitrust risk is high (e.g., Comanor 1967).

I employ a difference-in-differences (DID) design to test my central hypothesis, treating the 2010 adoption of the California Act as a quasi-natural exogenous shock and examining its effect on vertical acquisitions. As the California Act applies to manufacturers and retailers that do business in California and have annual worldwide gross receipts over $100 million, I identify treated firms based on their sales and business activities in California. I employ the Bureau of Economic Analysis (BEA) Input-Output (I/O) Accounts data to identify vertical acquisitions (e.g., Fan and Lang 2000; Acemoglu et al. 2009; Garfinkel and Hankins 2011). Using a fiscal firm-year panel during 2008-2014, the baseline DID tests show that treated firms make more vertical acquisitions following the adoption of the California Act, relative to firms not subject to the legislation. Following the California Act, treated firms exhibit a 1.4% rise in the unconditional likelihood of engaging in vertical acquisitions compared to control firms; an economically meaningful 46.7% increase compared to the sample mean of 3.0%. I find treated and control firms exhibit parallel trends in their vertical acquisition activities before the regulation. After further

[6] Pickles and Zhu (2013) contend that after the California Act, "it is advisable to refer explicitly… to the company's policies, procedures, and standards regarding the provenance of a product."

classifying vertical acquisitions into upstream and downstream vertical acquisitions, I find the surge in vertical acquisitions is mainly driven by the increase in upstream vertical acquisitions, in line with the upstream supply chain being the main focus of the California Act.[7]

To delve into the potential channels through which the California Act encourages vertical acquisitions, I exploit the heterogeneity in focal firms' vertical integration incentives and expect the effect to be concentrated among firms facing greater pressure from stakeholders (Bateman and Bonanni 2019). First, I expect firms with higher litigation risk to be more responsive to this legislation, as firms have faced increased class action lawsuits resulting from the California Act, typically initiated by consumers. Second, I predict that the effect is concentrated among consumer-oriented firms (Hanlon and Slemrod 2009; Delgado and Mills 2017), since focal firms, especially consumer-oriented firms, bear reputational damages such as consumer backlash when suppliers misbehave (e.g., Hanlon and Slemrod 2009; Graham et al. 2014; Chen et al. 2023). Third, I expect to observe the effect particularly for firms facing greater pressure from activist groups including NGOs (e.g., KnowTheChain) and shareholder activists, which, as anecdotal evidence suggests, could exert pressure on focal firms to modify their labor practices in supply chains. Consistent with my prediction, I find that the positive impact of the California Act on vertical acquisitions is concentrated among firms with higher litigation risk, consumer orientation, NGO coverage, and socially responsible institutional ownership. Overall, these results suggest that pressure exerted by stakeholders such as customers, NGOs, and shareholder activists serve a plausible mechanism.

I also exploit the cross-sectional variation in focal firms' other vertical integration incentives and expect the effect of the California Act to be particularly present among firms for which disclosing supply chain information is costlier. First, I predict that firms that source from

[7] Upstream (downstream) vertical acquisitions are vertical acquisitions in which the target belongs to the acquirer's upstream (downstream) industry.

countries or industries with labor abuses bear higher costs, and therefore, are more responsive. Second, as prior work suggest that vertical integration is particularly useful in risk management when asset specificity is high (e.g., Klein et al. 1978; Williamson 1979; Bonaime et al. 2018), I expect to see a stronger effect for firms with stronger incentives of overall risk management (i.e., higher asset specificity). In line with my expectations, I find that the positive effect of the California Act on vertical acquisitions is concentrated among firms sourcing from countries or industries with labor abuses, and firms with higher asset specificity.

As the majority of treated firms in my sample are headquartered in California, I perform a set of tests to alleviate concerns that my results are driven by unobservable shocks specific to California firms, such as more acquisition opportunities. First, I conduct a falsification test focusing on non-vertical acquisitions, which also capture the intensity of acquisition opportunities and activities but are less likely to be affected by the California Act. I find no evidence that treated and control firms exhibit different patterns in non-vertical acquisitions following the law. Second, I further include state × fiscal year or state × industry × fiscal year fixed effects to control for time-varying or time- and industry-varying, state-level characteristics. Third, I test the robustness of my inferences by restricting the sample to firms in selected states that potentially share more similarities, including (1) California and its bordering states; (2) top 20 states with highest GDP in 2010; and (3) non-California states. Further, to ensure other spurious correlations are not driving the results, I conduct a second falsification test by defining a pseudo regulation year.

Firms can enhance vertical integration via multiple avenues, such as joint ventures and shareholder interlocking (e.g., Flath 1989), rather than solely relying on vertical acquisitions. So, I turn to two firm-year level measures of overall vertical integration, which reflects to what extent a firm is vertically integrated across its supply chain: (i) a text-based vertical integration score

developed by Frésard et al. (2020), which captures the linkage between a firm's 10-K product descriptions and product vocabularies from the BEA I/O tables; and (ii) the adjusted value-add ratio, an extensively used proxy for vertical integration in prior literature and defined as income components scaled by sales adjusted by net income and income taxes (e.g., Tucker and Wilder 1977; Maddigan 1981; Chen 2017).[8] Consistent with my hypothesis, I find that relative to control firms, treated firms increase overall vertical integration within supply chains after the California Act, exhibiting a higher vertical integration score and higher value-added ratio.

Next, I examine the flip side of vertical integration – production outsourcing, to test the supposition that accompanied by enhanced vertical integration within supply chains, firms rely less on their suppliers and reduce production outsourcing. I employ two proxies including the number of suppliers for a given firm-year based on the FactSet Revere Supply Chain Relationships (Agca et al. 2022; Dong et al. 2022; Crosignani et al. 2023), and the firm-year level production outsourcing amount estimated by a stochastic Cobb-Douglas production function (Kovach et al. 2023). I find evidence of a reduction in the number of suppliers and production outsourcing amount for treated firms following the California Act, relative to control firms, suggesting that treated firms shift from production outsourcing to in-house production.

To further corroborate my inferences, I explore other corporate outcomes related to vertical integration. First, I examine firms' voluntary disclosure of their vertical integration activities, focusing on one of the most important corporate information events – conference calls (e.g., Frankel et al. 1999; Bowen et al. 2002; Huang et al. 2018). Voluntary disclosure captures firms' both existing and future vertical integration activities. Using narratives in the presentation parts of conference calls, I find that managers at treated firms talk more about vertical integration after the

[8] Income components are the summation of depreciation and amortization, pension and retirement expenses, staff expenses, interest expenses, rental expenses, and finished goods inventories.

California Act, relative to managers at control firms. I also find that treated firms develop new businesses and their product descriptions become more similar to those in their upstream industries following the California Act. Besides, I find that subsequent to the California Act, treated firms exhibit a surge in strategic alliance activity – an alternative avenue firms can explore, apart from vertical acquisitions, to bolster their vertical integration and enhance control over supply chains.

Next, I validate an underlying assumption in my study that the California Act imposes costs on focal firms, in particular, heightened litigation risk regarding human rights issues. First, descriptive evidence suggests a notable increase in both public attention on human trafficking and litigation regarding supply chain human trafficking in California, following the California Act. Second, I find treated firms' investors negatively react to the passage and implementation of this law. Third, formally examining human trafficking and litigation discussed in firms' 10-K filings and lawsuits against firms covered by media outlets, I observe a substantial increase in corporate disclosure and media coverage of litigation and human rights issues among treated firms following the California Act, relative to control firms, validating my assumption.

I conduct a rich set of robustness tests. First, to further rule out concerns about potential discrepancies between treated and control firms, I employ entropy balancing and propensity score matching approaches, as well as restrict my sample to firms falling within a small bandwidth of $100 million sales threshold. Second, I exclude the global financial crisis period to alleviate concerns that my findings are driven by the financial crisis. Third, to address concerns about differences between firms making acquisitions and those not, I limit the sample to firms with active acquisition activities. Fourth, I use alternative dependent variables including vertical acquisitions classified by alternative vertical relatedness coefficient thresholds and the deal value of vertical

acquisitions. Last, I use Poisson and negative binomial regression models to account for the nonlinearity. In all circumstances, the results remain consistent with my primary findings.

My study makes four main contributions. First, my study sheds light on the impacts of the costs of disclosure regulations on corporate outcomes by bridging the research gap between disclosure regulations and corporate boundaries. To my knowledge, my study is among the first to document the (causal) effect of disclosure regulations on firm boundaries. One stream of research focuses on the effects of costs arising from disclosure regulations, such as market value (Blacconiere and Patten 1994; Patten and Nance 1998), stock liquidity (Bushee and Leuz 2005), investment efficiency (Jayaraman and Wu 2019), public lisiting decisions (Aghamolla and Thakor 2022; Yost 2023), and reputational capital (Karpoff et al. 2005; Andreicovici et al. 2023). Some recent studies in finance and economics examine how regulations, not disclosure regulations specifically, affect firm boundaries and operating decisions (Katsiardis 2020; Moon and Sertsios 2023).[9] My findings enrich the literature by documenting an unintended consequence of disclosure regulations: shifts in firms' cost-benefit analysis when assessing corporate boundary decisions.

Second, my paper contributes to the literature on corporate boundaries and vertical integration, which dates back to the seminar work of Coase (1937). In economics and management, extensive theoretical studies have developed to analyze the costs and benefits of firms' make-or-buy decisions (e.g., Williamson 1975, 1979, 1985; Klein 1983, 2005; Perry 1989; Tadelis 2002; Antras 2003; Alfaro et al. 2019), and empirical literature has been growing recently, such as the stage of industry evolution (Argyres and Bigelow 2010), technology intensity (Acemoglu et al. 2010), and output prices (Alfaro et al. 2016). One stream of accounting literature, mostly in

[9] Moon and Sertsios (2023) find that firms facing higher labor protection in foreign countries replace their integrated operations with arm's-length relations in those nations. Katsiardis (2020) documents how a regulatory cap on the size of for-hire trucking sector in Greece induced firms to operate larger, more underutilized commercial vehicle fleets.

analytical managerial accounting, focuses on which factors affect outsourcing, such as management control systems (Langfield-Smith and Smith 2003; Sedatole et al. 2012), strategic competitive considerations (Arya et al. 2008; Arya et al. 2014), supplier-buyer interactions (Anderson et al. 2000), institutional constraints (Balakrishnan et al. 2010), information misappropriation (Baiman and Rajan 2002), demand uncertainty (Holzhacker et al. 2015), and initial control choice (Phua et al. 2011). I contribute to this strand of research by showing one important determinant – the costs induced by enhanced supply chain transparency.

Third, my paper adds to the literature on vertical acquisitions. Existing literature focuses on the stock market responses to vertical acquisitions (Fan and Goyal 2006; Kedia et al. 2011) and the role of innovation, industry links, and risk management in vertical acquisitions (Garfinkel and Hankins 2011; Ahern and Harford 2014; Frésard et al. 2020). My study is distinct and focuses on supply chain disclosure regulations and how the costs that emerge from enhanced supply chain transparency affect firms' incentives to engage in vertical acquisitions.

Last, my study responds to Christensen et al.'s (2021) call for more research on the real effects of environmental, social and governance (ESG) disclosure, building on recently emerging, but still limited empirical evidence (Christensen et al. 2017; Downar et al. 2021; Fiechter et al. 2022; She 2022). More broadly, my study adds to the literature on the real effects of disclosure (Leuz and Wysocki 2016; Roychowdhury et al. 2019), by documenting that supply chain disclosure shapes corporate boundaries in general and facilitates vertical integration in particular. My findings are also relevant to policymakers who are promoting supply chain transparency.

The remainder of the paper proceeds as follows. Section 2 introduces the institutional background and develops the central hypothesis. Section 3 describes sample selection and data. Sections 4, 5, and 6 present main, additional, and robustness analyses. Section 7 concludes.

2 Institutional Background and Hypothesis Development

2.1 The California Transparency in Supply Chains Act of 2010

Adopted in October 2010, the California Act (SB 657, Civil Code Section 1714.43) is one of the first batches of legislation focused on modern slavery and human trafficking in supply chains. The California Act requires companies to "disclose information regarding their efforts to eradicate human trafficking and slavery within their supply chains on their website or, if a company does not have a website, through written disclosures."[10] Specifically, the California Act requires companies, at a minimum, to disclose their efforts to address human rights issues within their supply chains in five key areas: evaluation and verification of product supply chains, audits of suppliers, certification requirements for direct suppliers, internal accountability standards and procedures, and relevant training for employees and management. Even if a company has not made any efforts in these areas, it must disclose that it has taken no action. Appendix B provides four examples of California Statements that companies disclose in compliance with the California Act. The California Act specifies three key criteria all of which a company must satisfy to be subject to the law: (1) the company identifies itself as a retail seller or manufacture in its tax returns; (2) the company satisfies the legal requirements for "doing business" in California; (3) the company has annual worldwide gross receipts exceeding $100 million. To ensure firms' compliance with the California Act's disclosure requirements, the California Attorney General can seek injunctive relief against firms if firms do not comply. The California Attorney General notified all companies it determined to be subject to the California Act through a document entitled "Informational Letter to Companies", as well as issued a resource guide to help companies develop such disclosure. In addition, the California Act expressly states that it does not limit any remedies that may be

[10] See more details at the website of the State of California Department of Justice: https://oag.ca.gov/SB657.

available for a violation of any other state or federal law. For instance, consumers have initiated lawsuits pointing to the California Act disclosure statements as a basis for alleged liability under California consumer protection statutes (Hirose 2018).[11]

In 2007, Julia Ormond, a Hollywood actress and human rights campaigner, founded the Alliance to Stop Slavery and End Trafficking (ASSET), started to approach the California Senate President pro Tempore Darrell Steinberg about sponsoring anti-slavery and trafficking legislations in California, and initiated an online campaign. This campaign aimed to survey firms' supply chain labor policies and discovered high consumer interest but low corporate engagement (less than 10%), which catalyzed the proposal and passage of the California Act.[12] Given the lack of access for Californians to information on human trafficking and modern slavery used to produce the goods they purchased, Senator Steinberg introduced the bill in 2009, which got approved in October 2010. California enacted this legislation to give consumers visibility into human right issues in businesses to inform their purchasing decisions. In addition, the California Act encourages businesses to be proactive about responsible sourcing.

2.2 Hypothesis development

I hypothesize that the California Act increases the costs of relying on suppliers (i.e., outsourcing) and therefore makes vertical integration (i.e., in-house production) more attractive. There are a range of potential costs the California Act may exert on firms subject to this legislation. First, since interest parties will access and use firms' supply chain disclosure on antislavery efforts to exert public pressure such as through litigation, the California Act elevates focal firms' litigation risk arising from the "legal responsibility for suppliers' treatment of workers." The California Act

[11] These California consumer protection statutes include the Unfair Competition Law, the False Advertising Law, the Consumers Legal Remedies Act, among others (Hirose 2018).
[12] This campaign received 67,000 consumer emails and 58 company disclosure responses.

has triggered a lot of civil lawsuits filed against firms accused of making misleading public statements regarding their antislavery efforts. Second, the California Act could inflate reputational costs when suppliers violate labor laws, as suppliers' misbehavior may reflect poorly on their customer firms and lead to reputational damages (e.g., consumer boycotts) (Chen et al. 2023).[13] Third, focal firms face considerable costs of gathering supply chain information and monitoring suppliers through supply chain contracts, audits, and assurance, due to highly diversified supply chains across multiple geographies, misaligned incentives among stakeholders along supply chains, and incomplete contracting nature (e.g., Jenson and Meckling 1976; Klein 1983; Grossman and Hart 1986; Gietzmann 1996; Sodhi and Tang 2019; Kraft and Zheng 2021), as well as a short time window the California Act gave firms to update their supply chain practices and ensure compliance.[14,15] In addition, disclosing supply chain information such as the provenance of a product may bring about proprietary costs (Pickles and Zhu 2013; Ott et al. 2017). Thus, I argue that the California Act exposes firms to greater costs of relying on suppliers, making in-house production and vertical integration more appealing. Formally, I state my hypothesis as below:

H: *Firms become more vertically integrated, including via making vertical acquisitions following the adoption of the California Act.*

My prediction is not without tension. Instead of turning to in-house production and vertical integration, which is a big corporate decision, firms may respond to the California Act in other ways including enhancing due diligence, monitoring, and contracting to better control their

[13] Gibbons P.C., a U.S. law firm, says that the California Act "authorizes the Attorney General to bring an action for injunctive relief directing compliance. Still, such litigation is public and may adversely affect a company's reputation."
[14] To update practices and comply with the California Act, firms have around 15 months (i.e., between when the California Act was signed into law, October 2010, and when it became effective, January 1, 2012).
[15] Goldman Sachs Equity Research "A new framework for assessing business resilience, applied to Autos" on May 23, 2022 states that "a supply chain audit involves a review of a company's extended supply chain to assess risks across several dimensions." "Supply chain assurance and more intricate audits come with significant costs, as (1) many companies have highly diversified supply chains across multiple geographies and (2) traceability of raw ingredients is a significant challenge in multi-layered supply chains."

suppliers, or switching to suppliers with better labor practices (Dai et al. 2021; She 2022; Bisetti et al. 2023; Lu et al. 2023). Also, due to antitrust risk concerns, firms may be hesitant about making vertical acquisitions (Comanor 1967; Blair and Kaserman 1978; Bryan and Hovenkamp 2020; Boehm and Sonntag 2023). Anti-trust agencies and regulators such as the Department of Justice (DOJ) and the Federal Trade Commission (FTC) can exert pressure to impede firms' vertical acquisition activities that are deemed as anticompetitive.[16]

3 Sample and Data

3.1 Sample construction

My sample period ranges from fiscal years 2008-2014, covering a seven-year time window centering around the adoption of the California Act. I start with all Compustat firm-years between 2008-2014 and only keep manufacturing and retail firms (SIC codes 2000-3999, 5200-5999), since the California Act only targets retail sellers and manufacturers. Then I exclude firm-years with missing control variables for my main analyses. To ensure that my results are not affected by the change in firm composition, I keep only firms with observations in both the pre- and post-regulation periods. My final sample consists of 16,711 fiscal firm-years from 2008-2014, representing 2,615 unique firms. Table 1 summarizes the main sample selection process.

[Insert Table 1 about here]

3.2 Definition of treated firms

Based on the requirements of the California Act, I identify firms that are subject to and meaningfully affected by the California Act as those categorized as "doing business in California", have annual sales of at least $100 million prior to the legislation, and operate in manufacturing or

[16] For instance, the U.S. Department of Justice litigated a vertical merger case in 2017 to block AT&T/DirecTV's proposed acquisition of Time Warner, arguing that the proposed vertical merger was anticompetitive. (https://www.justice.gov/opa/pr/justice-department-challenges-attdirectv-s-acquisition-time-warner)

retail industries. Following She (2022), I categorize a firm as "doing business in California" if it satisfies any of the following conditions: (1) the firm is either headquartered or incorporated in California; (2) the fraction of its factories located in California is greater than 20 percent, based on its toxic emission records in the toxic release inventory (TRI) database of the U.S. Environmental Protection Agency (EPA) (Hsu et al. 2018); (3) the fraction of its subsidiaries in California (relative to other states and countries) on Exhibit 21 is greater than 20 percent.[17] Following this methodology, my main sample consists of 282 unique treated firms and 2,333 unique control firms, with California having the largest number of treated firms headquartered (~230).[18]

3.3 Definition of vertical acquisitions

I obtain acquisition data from the Securities Data Company (SDC) Platinum and use the BEA I/O Accounts data to identify vertical acquisitions, following prior literature (e.g., Fan and Lang 2000; Fan and Goyal 2006; Acemoglu et al. 2009). Specifically, I construct a measure of vertical relatedness coefficient between any two industries as follows. First, I calculate the amount of output required from industry *i* to produce one dollar's worth of industry *j*'s output (v_{ij}). Then I calculate its corollary (amount of output required from industry *j* to produce one dollar of output in industry *i* (v_{ji})). The vertical relatedness coefficient (V_{ij}) is the maximum of these two metrics (i.e., v_{ij} and v_{ji}). I use the 2012 BEA I/O Accounts data, as the BEA updates the data every five years and year 2012 roughly splits my sample period into two halves.[19]

[17] One of the conditions in She (2022) is that the citation share of "California" (relative to other states and countries) on Items 1, 2, 6, and 7 of 2010 annual report is greater than 20 percent. This citation share-based measure is highly correlated with the fraction of subsidiaries in a specific state based on Exhibit 21 and "provide a reasonable proxy for locations of significant subsidiaries" (Addoum et al. 2020; Dyreng et al. 2020). In untabulated analyses, my main inferences remain consistent when setting the threshold as 10, 30, 40, or 50 percent.

[18] To the extent that I misclassify a firm subject to the California Act as a control firm, this will bias against me finding the results. In untabulated analyses, my main inferences are consistent when I use the KnowTheChain benchmark data to revise the classification of treated firms.

[19] Since the BEA uses the I/O industry codes in its 2012 I/O Accounts data, I rely on the concordance tables provided by the BEA to match the six-digit NAICS codes with the I/O industry codes.

In main analyses, I set the threshold of vertical relatedness coefficient at 1% to classify vertical acquisitions and require that the acquirer and the target firm do not share the same two-digit SIC industry code, consistent with prior studies (e.g., Fan and Lang 2000; Fan and Goyal 2006; Acemoglu et al. 2009; Garfinkel and Hankins 2011; Shenoy 2012; Lee et al. 2018; Lin et al. 2018).[20] Using this methodology, I classify 677 acquisitions as vertical acquisitions in my main sample, accounting for 16% of total acquisitions (~4,215 total acquisitions). The ratio of vertical acquisitions to total acquisitions is comparable to the figure in prior studies, such as 12% in Lee et al. (2018) and 18% in Fan and Goyal (2006). I construct two proxies for vertical acquisitions: (1) *Vertical Dummy* is an indicator variable equal to one if the firm makes vertical acquisitions for the current fiscal year, and zero otherwise; and (2) *Vertical Num* is the number of vertical acquisitions made by the firm for the current fiscal year.[21]

3.4 Summary statistics

Table 2 presents the summary statistics for my main sample. The mean value of *Vertical Dummy* is 0.030, suggesting that 3.0% of firm-years make vertical acquisitions. This figure is comparable to recent studies such as Garfinkel and Hankins (2011), in which 3% of firm-years have vertical acquisitions. The mean value of *Vertical Num* is 0.041, suggesting that on average each firm-year makes 0.041 vertical acquisitions. The mean values of my key independent variables of interest, *Treat* and *Post*, are 0.109 and 0.555, respectively, suggesting a relatively balanced sample during the pre- and post-regulation periods.

[Insert Table 2 about here]

[20] In untabulated analyses, my inferences are consistent when I use the BEA I/O or NAICS industry codes to classify vertical acquisitions. In Table 13 Panel B, I use alternative thresholds to classify vertical acquisitions, including greater than 0%, equal to or greater than 0.5%, and equal to or greater than 5%, and my main inferences remain consistent.
[21] In untabulated analyses, my inferences are consistent when I use the natural log of one plus the number of vertical acquisitions made by the firm for the current fiscal year as the proxy for vertical acquisitions.

4 Main Analyses

4.1 Baseline analyses: Effect of the California Act on vertical acquisitions

I use the following baseline ordinary least squares model with a difference-in-differences (DID) design to examine the effect of the California Act on vertical acquisitions:

$$Vertical\ Acq_{i,t} = \alpha + \beta_1 Treat_i \times Post_t + \beta_k Controls_{i,t} + \delta_i + \gamma_t\ or\ \gamma_{ind \times t} + \epsilon_{i,t} \quad (1)$$

The dependent variable, *Vertical Acq*$_{i,t}$, represents firm *i*'s vertical acquisition activities during fiscal year *t*, proxied by two variables, including an indicator variable, *Vertical Dummy*, and a count variable, *Vertical Num*. *Treat*$_i$ is an indicator variable for treated firms, and *Post*$_t$ is an indicator variable equal to one for observations on or after the adoption of the California Act (i.e., 2011-2014), and zero for the period from 2008 to 2010. Following prior literature (e.g., Acemoglu et al. 2010; Lin et al. 2018; Frésard et al. 2020), I include a set of control variables, including firm size (*Size*), firm age (*Age*), tangibility (*PPE*), financial leverage (*Leverage*), profitability (*ROA*), cash holdings (*Cash*), the presence of net losses (*Loss*), and sales growth (*Sales Growth*). I also control for the firm's R&D intensity (*R&D*) since vertical integration activities are a function of the technology and R&D possibilities (Acemoglu et al. 2010). I include firm fixed effects to control for any unobservable firm-specific, time-invariant characteristics that might affect vertical acquisition activities. I also include fiscal year or two-digit SIC industry × fiscal year fixed effects, to control for any unobservable general time trends or time-varying, industry-level characteristics that might impact vertical acquisitions. Finally, I cluster standard errors by the state of headquarters to account for the within-state correlation of residuals across firm-years, as the treatment variable is largely determined by a firm's headquarters location (She 2022).[22]

[22] In untabulated analyses, my main inferences are consistent when clustering standard errors by two-digit SIC industry, by two-digit SIC industry and fiscal year, or by firm.

Table 3 tabulates the results of estimating the baseline model in Eq. (1). In column 1 using *Vertical Dummy* as the dependent variable and including only firm and fiscal year fixed effects as control variables, the coefficient on *Treat* × *Post* is positive and significant (coef.= 0.012; t-stat.= 1.98). Column 2 controls for additional firm characteristics and shows that the coefficient on *Treat* × *Post* is still positive and significant (coef.= 0.013; t-stat.= 2.22). Column 3 includes firm and two-digit SIC industry × fiscal year fixed effects as well as firm-level control variables, and shows similar inferences (coef.= 0.014; t-stat.= 2.61). The results in columns 1-3 suggest that compared to firms not subject to the California Act, firms affected by this legislation are more likely to make vertical acquisitions following the adoption of the California Act. In terms of the economic magnitude, the effect represents a 46.7% relative increase in the likelihood of making vertical acquisitions, compared to the sample mean of 3.0%.[23] Columns 4-6 show similar results for *Vertical Num*, indicating that treated firms make more vertical acquisitions after the adoption of the California Act, relative to control firms.

[Insert Table 3 about here]

4.2 Parallel trend assumption

To test the validity of the parallel trend assumption (Angrist and Pischke 2008), I conduct an event-time analysis to examine the dynamic treatment effect of the California Act on vertical acquisitions, by estimating the following ordinary least squares model:

$$\begin{aligned} Vertical\ Acq_{i,t} = {} & \alpha + \beta_1 Treat_i \times Year\ t-3_t + \beta_2 Treat_i \times Year\ t-2_t \\ & + \beta_3 Treat_i \times Year\ t_t + \beta_4 Treat_i \times Year\ t+1_t \\ & + \beta_5 Treat_i \times Year\ t+2_t + \beta_6 Treat_i \times Year\ t+3_t \\ & + \beta_k Controls_{i,t} + \delta_i + \gamma_t\ or\ \gamma_{ind \times t} + \epsilon_{i,t} \end{aligned} \quad (2)$$

[23] Based on column 3 of Table 3, the economic magnitude is calculated as follows: 0.014 ÷ 0.030 = 46.7%.

Year t-3 to *Year t+3* are year indicators relative to the treatment year (i.e., 2011). *Year t-1* is omitted from this model since it serves as the benchmark period. Table 4 presents the regression results of estimating Eq. (2). Across all six columns, there is no significant difference between treated and control firms in vertical acquisition activities before the California Act (years *t-3* to *t-1*). Following the California Act, relative to control firms, treated firms start to make significantly more vertical acquisitions. Figure 1 Panel A (B) plots the coefficients of the results in column 3 (6) of Table 4 and includes 90% confidence intervals calculated based on standard errors clustered by headquarters state, using *Vertical Dummy* (*Vertical Num*) as the dependent variable. The results in Table 4 and Figure 1 support the existence of parallel trends for the treated and control groups in the pre-regulation period. Overall, the results in Tables 3-4 and Figure 1 provide plausibly causal evidence that the California Act induces firms to make more vertical acquisitions.

[Insert Table 4 and Figure 1 about here]

4.3 Cross-sectional analyses: The influence of stakeholder pressure

To delve into the potential mechanisms through which the California Act induces firms to make more vertical acquisitions, I examine the heterogeneity in firms' vertical integration incentives and posit that the positive impact is concentrated among firms facing higher pressure from stakeholders such as consumers, NGOs, and shareholder activists (Bateman and Bonanni 2019). First, as firms have faced increased class action lawsuits typically initiated by consumers because of the California Act, I expect the effect to be concentrated among firms facing higher litigation risk. I partition my main sample into two subsamples based on whether the firm belongs to an industry with high litigation risk (*High Litigation-Risk Industry*) (e.g., Kim and Skinner 2012).[24] Consistent with my prediction, the results in columns 1-2 of Table 5 Panel A suggest that

[24] SIC codes of industries with high litigation risk in my sample: 2833-2836, 3570-3577, 3600-3674, and 5200-5961.

the effect of the California Act on vertical acquisitions is concentrated among firms in industries facing high litigation risk (column 2).[25] I use the number of EDGAR views of the firm's filings by plaintiffs' law firms (*Plaintiff-Lawyer Views*) as the second proxy for ex-ante litigation risk (Kartapanis and Yust 2022), and find consistent evidence that the results in columns 3-4 of Table 5 Panel A are concentrated among firms with high plaintiff-lawyer views (column 4). Overall, the results in Table 5 Panel A support the litigation risk channel.

Given the reputational and financial damages firms have to bear when their suppliers' misbehavior becomes public, firms are concerned about their suppliers' opportunistic behavior (Chen et al. 2023). Recent literature suggests that firms with more consumer orientation are more concerned about potential reputation costs, for example, in the form of a consumer backlash (e.g., Hanlon and Slemrod 2009; Graham et al. 2014). With enhanced supply chain transparency, due to concerns about their reputational capital, consumer-oriented firms are likely to view relying on upstream suppliers more costly and risky, and therefore find vertical integration more attractive. Therefore, in the second set of cross-sectional analyses, I predict that consumer-oriented firms are more responsive to the California Act and make more vertical acquisitions. I use two proxies for reputational costs, including the firm-level advertising expense scaled by sales (*Advertising Exp/Sale*) (Hanlon and Slemrod 2009) and the six-digit NAICS industry-level percentage of output sold to Personal Consumption Expenditure (PCE) (*PCE Score*), where the PCE is a final use item in the I/O Accounts that captures the value of the goods and services purchased by households, such as food, cars, and college education (Delgado and Mills 2017). As Table 5 Panel B shows, the effect of the California Act on vertical acquisitions is stronger among consumer-oriented firms – firms with higher value of *Advertising Exp/Sale* (column 2) or *PCE Score* (column 4).

[25] For brevity, the results of cross-sectional tests controlling for firm and industry × fiscal year fixed effects or using *Vertical Dummy* as the dependent variable are not tabulated, although they are consistent.

Third, activist groups such as NGOs and shareholder activists could exert pressure on focal firms to modify their labor practices in supply chains, suggested by anecdotal evidence. I expect the real effect of the California Act on vertical acquisitions to be particularly present among firms facing greater pressure from these activist groups. To explore the role of NGOs, I created an industry-level measure of NGO coverage (*NGO*), which is the proportion of firms covered by KnowTheChain within each two-digit SIC industry. To examine the influence of shareholder activists, I focus on high social norm foreign institutional investors and construct a firm-year level measure of high social norm foreign institutional ownership (*Prosocial Shareholder*) following Dyck et al. (2019), who find that foreign institutional investors from high social norm countries are active and successful in pushing U.S. firms to improve their environmental and social performance. Then I partition my sample based on the median value of *NGO* and *Prosocial Shareholder*. The cross-sectional results in Table 5 Panel C reveal that increased vertical acquisition activities for treated firms relative to control firms following the California Act are concentrated among firms with higher potential NGO coverage (column 2) and socially responsible institutional ownership (column 4). These findings align with my argument that pressure exerted by activist groups serve as one of the plausible mechanisms.

[Insert Table 5 about here]

4.4 Cross-sectional analyses: The influence of other vertical integration incentives

To further understand the mechanisms underlying the effect of the California Act on vertical acquisitions, I explore the cross-sectional variation in firms' other vertical integration incentives. I predict that the effect is concentrated among firms for which disclosing supply chain information is costlier. First, firms involved in potential labor issues in supply chains are likely to bear higher costs. I use the intensity of firms' outsourcing to countries with labor issues (e.g.,

forced labor, child labor) as the first proxy for firms' exposure to suppliers' labor violations (She 2022). Specifically, I obtain a list of countries with forced or child labor identified by the U.S. Department of Labor and countries from which a firm purchases inputs using the offshoring data developed by Hoberg and Moon (2017, 2019). I construct an industry-level measure of sourcing risk (*Sourcing Ctr Risk*) by computing the median value of the total frequency of purchases from countries with high labor risk within each two-digit SIC industry. My second proxy captures the intensity of firms' outsourcing to industries with labor issues. Specifically, I use the FactSet Revere Supply Chain Relationships to identify focal firms' suppliers and Violation Tracker to identify industries with high labor violations.[26] Then I calculate focal firms' frequency of relationships with suppliers from industries with high labor violations (*Sourcing Ind Risk*). The results in Table 6 Panel A suggest that the effect of the California Act on vertical acquisitions is only present among firms sourcing from countries or industries with labor issues (columns 2 and 4).

Second, I conduct another set of cross-sectional analyses exploiting the heterogeneity in firms' overall risk management incentives. Prior theoretical and empirical work suggest that vertical integration is particularly useful to risk management when asset specificity is high, as the benefits of vertical integration as a hedge against uncertain cash flows increase with firms' asset specificity (e.g., Klein et al. 1978; Williamson 1979; Garfinkel and Hankins 2011; Bonaime et al. 2018). As the California Act increases firms' perceived risk, I expect its effect on vertical acquisitions to be more pronounced for firms with higher asset specificity. The first sample split is based on whether the firm belongs to an industry with higher *Ind Asset Specificity*, defined as the ratio of total R&D expenditures to total sales within the two-digit SIC industry (Garfinkel and Hankins 2011). The second cross-sectional cut is based on *Firm Asset Redeploy*, a firm-year level

[26] The FactSet Revere Supply Chain Relationships collects firms' supply chain relationship information from various sources, such as 10-K filings, investor presentations, company websites, and company press releases.

measure of asset redeployability developed by Kim and Kung (2016) and Kim (2018), with lower asset redeployability denoting higher asset specificity. The cross-sectional results in Table 6 Panel B suggest that increased vertical acquisition activities for treated firms relative to control firms following the California Act are concentrated among firms with higher asset specificity (columns 2 and 4), for which conducting vertical acquisitions is a more useful tool of risk management. Overall, the results in Table 6 suggest that the effect of the California Act on vertical acquisitions are concentrated among firms which bear higher costs of disclosing supply chain information.

[Insert Table 6 about here]

4.5 Effect of the California Act on upstream vs downstream vertical acquisitions

Next, I classify vertical acquisitions into upstream and downstream vertical acquisitions, where upstream (downstream) vertical acquisitions are acquisitions in which the target belongs to the acquirer's upstream (downstream) industry. I expect the positive effect of the California Act to hold for upstream acquisitions, as the California Act mainly focuses on human rights issues in suppliers.[27] With respect to downstream acquisitions, the effect remains unclear ex-ante. On one hand, one may anticipate no impact on downstream acquisitions because (1) the downstream supply chain is not the main focus of this legislation; and (2) retailers, one of the two target groups of this legislation, already reside in the downstream of the supply chain and may not be involved in further downstream industries. On the other hand, firms sometimes also disclose efforts to address human rights risk in downstream supply chains in California Act Statements.[28] Moreover,

[27] An article titled "Downstream due diligence: Regulation through litigation" by Drimmer et al. (2022) states that "To date, legislation and corporate efforts, consistent with the approach of the Council, have focused primarily on upstream relationships, involving supply chains at the first tier and beyond. Relevant laws include: the trio of modern slavery acts – in California, the UK and Australia."

[28] For instance, Bayer AG's 2022 Transparency in Supply Chains Act Statement states that "We identified the human rights that could be most significantly negatively impacted through our activities and business relations in the upstream and downstream value chains (salient human rights)..." Future Foam's California Act Statement says that "Future Foam's Vision is part of its day-to-day business operations and a message that it shares not only with its employees but with members of its direct, upstream and downstream supply chain."

following decisions to pursue upstream vertical acquisitions, firms may make downstream vertical acquisitions to enhance organizational integration, streamline operations, and achieve cost efficiencies across entire supply chains (e.g., Larsson and Finkelstein 1999; Cording et al. 2008; Bernile and Lyandres 2010; Benitez et al. 2018). To test the effect of the California Act on upstream and downstream vertical acquisitions, I estimate a modified Eq. (1) replacing *Vertical Acq* as *Up Vertical Acq* (*Down Vertical Acq*) and tabulate the results in Table 7 Panel A (B). Table 7 Panel A shows that treated firms conduct significantly more upstream vertical acquisitions following the California Act, relative to control firms. Table 7 Panel B provides weak evidence that treated firms also increase downstream vertical acquisitions, but the results are sensitive to the choice of dependent variables. Overall, the results in Table 7 suggest that the positive effect of the California Act on vertical acquisitions is mainly driven by upstream vertical acquisitions.

[Insert Table 7 about here]

4.6 Falsification tests

The majority of treated firms in my sample are headquartered in California, which brings about concerns that some factors unique to California firms, such as more acquisition activities, may drive the results. I perform a falsification test to alleviate these concerns, by identifying non-vertical acquisitions as acquisitions either with zero vertical relatedness coefficient or where the acquirer and the target are in the same industry. The rationale is that non-vertical acquisitions should also represent the intensity of overall acquisition activities, but are less likely to be affected by the California Act per se. I estimate Eq. (1) after replacing *Vertical Acq* with *Non-Vertical Acq* (i.e., two proxies for non-vertical acquisitions including *Non-Vertical Dummy* and *Non-Vertical Num*) and tabulate the results in Table 8 Panel A. Across all columns, the coefficients on *Treat* × *Post* are insignificant, revealing no effect of the California Act on non-vertical acquisitions.

To further ensure other spurious correlations in my data are not driving the results, I conduct a placebo test by assuming 2004 as the regulation year and focusing on a seven-year time window centering around 2004.[29] I estimate Eq. (1) after replacing *Post* with *Pseudo Post*, which is an indicator variable equal to one for years 2004-2007, and display the results in Table 8 Panel B. The coefficients on *Treat* × *Post* are statistically indistinguishable from zero, denoting no effect of the pseudo regulation on vertical acquisitions. Overall, the results in Table 8 suggest that my main findings are unlikely to be driven by other unobservable variables.

[Insert Table 8 about here]

5 Additional Analyses

5.1 Effect of the California Act on overall vertical integration

In this subsection, I utilize two firm-year level measures of overall vertical integration, which captures to what extent a firm is vertically integrated within its supply chain. One main advantage of measures of overall vertical integration is that they capture the full picture of firms' vertical integration activities (Bourveau et al. 2023), as firms can vertically integrate along its supply chain via multiple approaches beyond making vertical acquisitions, such as directly investing in upstream manufacturing plants, purchasing product lines of upstream firms, increasing shareholding interlocks, and forming joint ventures, most of which are usually unobservable to researchers (e.g., Flath 1989). The first measure, *Vertical Integration Score*, is a text-based vertical integration score developed by Frésard et al. (2020) and reflects the link between firms' 10-K product descriptions and product vocabularies from the BEA I/O tables. The second measure, *Value-Added Ratio*, is an extensively used proxy for vertical integration in prior literature and defined as income components scaled by sales adjusted by net income and income taxes, where

[29] In untabulated analyses, I assign year 2005 or 2006 as the alternative pseudo-regulation year, respectively, and find no significance.

income components include depreciation and amortization, pension and retirement expenses, staff expenses, interest expenses, rental expenses, and finished goods inventories (e.g., Tucker and Wilder 1977; Maddigan 1981; Chen 2017; Li et al. 2017).[30,31] A higher value of *Vertical Integration Score* or *Value-Added Ratio* denotes the firm being more vertically integrated along the supply chain. Columns 1-2 of Table 9 Panel A present the results of estimating a modified Eq. (1) using *Vertical Integration Score* as the dependent variable. The coefficients of *Treat* × *Post* are positive and significant across columns 1-2 (coef.= 0.034; t-stat.= 2.99 and coef.= 0.027; t-stat.= 2.08), and insensitive to different fixed effects structures. Columns 3-4 of Table 9 Panel A present consistent results using *Value-Added Ratio* as the dependent variable. Columns 1-2 (3-4) of Table 9 Panel B and Figure 2 Panel A (B) present the dynamic treatment effect of the California Act on vertical integration, by estimating a modified Eq. (2) using *Vertical Integration Score* (*Value-Added Ratio*) as the dependent variable, and the results support the existence of the parallel trends. Overall, the results in Table 9 and Figure 2 indicate that the California Act induces firms to become more vertically integrated along supply chains.

[Insert Table 9 and Figure 2 about here]

5.2 Effect of the California Act on production outsourcing

In this subsection, I examine the flip side of vertical integration – production outsourcing. If firms become more vertically integrated along their supply chains, they are likely to rely less on production sourcing. I utilize the FactSet Revere Supply Chain Relationships to construct the first

[30] As staff expenses are missing for most of the observations in Compustat, following recent studies (e.g., Hartman-Glaser et al. 2019; Schlingemann and Stulz 2022), I impute missing staff expense using the product of the number of employees and the median of the ratio of staff expense to employees within the same Fama-French 17 industry. In untabulated analyses, my results are consistent when I use annual average three-digit NAICS wage obtained from the U.S. Bureau of Labor Statistics to impute missing staff expenses, following Chen (2017).

[31] To address concerns that factors other than vertical integration, especially changes in profitability and taxation rules, may affect the results from the income approach to computing value added, I exclude net income and income taxes from the numerator and the denominator (e.g., Tucker and Wilder 1977; Maddigan 1981; Chen 2017). My results are consistent when I keep net income and income taxes.

proxy for production outsourcing, *Suppliers Num*, which is the natural log of one plus the number of unique suppliers in a given firm-year (Agca et al. 2022; Dong et al. 2022; Crosignani et al. 2023). Second, following Kovach et al. (2023) to directly estimate firms' production outsourcing amount, I employ a stochastic Cobb-Douglas production function as below:

$$ln(COGS_{i,t}) = ln(A_{ind,t}) + \beta_1 ln(PPE_{i,t}) + \beta_2 ln(EMP_{i,t}) - u_{i,t} + v_{i,t} \quad (3)$$

where $u_{i,t}$ is a non-negative technical inefficiency term, assumed to follow a half-normal distribution, and its variance is modeled as a linear function of intangible assets and the most recent three years' investments into R&D and capital expenditures. $A_{ind,t}$ is an industry-specific technology factor. I use all manufacturing firms (SIC codes 2000-3999) and perform a separate regression of Eq. (3) for each year within industry-clustered standard errors. Then I calculate the natural log of the firm's production outsourcing amount, *Outsourcing*, as the summation of $ln(A_{ind,t})$ and $v_{i,t}$, and use it as the second proxy for outsourcing.[32]

Columns 1-2 (3-4) of Table 10 Panel A present the results of estimating a modified Eq. (1) using *Suppliers Num* (*Outsourcing*) as the dependent variable. The significantly negative coefficients of *Treat* × *Post* across all columns denote that treated firms reduce the number of their suppliers and outsourcing amount after the California Act. The parallel trend assumption is also supported by the results in Table 10 Panel B and Figure 3. Overall, Table 10 and Figure 3 provide supportive evidence on the reduction of production outsourcing for firms subject to the California Act, solidifying my main inferences.

[Insert Table 10 and Figure 3 about here]

5.3 Effect of the California Act on other vertical integration outcomes

[32] In untabulated analyses, the results are consistent when I use outsourcing amount scaled by total assets or cost of goods sold as the dependent variable.

I explore other vertical integration outcomes to further corroborate my findings. At first, I investigate firms' voluntary disclosure of their vertical integration activities, focusing on narratives in the presentation parts of conference calls – significant information events to the market (e.g., Frankel et al. 1999; Bowen et al. 2002; Matsumoto et al. 2011; Huang et al. 2018). Voluntary disclosure of vertical integration captures not only firms' vertical integration activities that have occurred, but also firms' plans to pursue future vertical integration activities.[33] I use a list of keywords related to vertical integration to track managers' discussion on vertical integration during each conference call's presentation part.[34] Then I construct four proxies, including the number of conference calls hosted talking about vertical integration (*Vertical Calls*), the number of related words on vertical integration (*Vertical Words*), the number of related words scaled by total number of words (*Vertical/Total Words*), and the number of related sentences scaled by total number of sentences (*Vertical/Total Sent*). I use these four variables as dependent variables in Eq. (1) and tabulate the results in Table 11 Panel A. The coefficients on *Treat* × *Post* are significantly positive across all columns, denoting an increase in treated firms' voluntary disclosure of vertical integration after the California Act.

Second, as a consequence of vertical integration, firms may possess new businesses. Hence, I test this supposition by estimating Eq. (1) using the number of business segments (*Business Seg Num*) as the dependent variable and tabulate the results in columns 1-2 of Table 11 Panel B. The

[33] For instance, KEMET Corp., Q1 2013 Earnings Call, Jul 26, 2012: "This past quarter, we continued to see progress in our action to secure and stabilize our supply chain through a status strategy of vertical integration." C&J Energy Services, Inc., Q2 2014 Earnings Call, Jul 31, 2014: "Our in-house manufacturing capabilities enable us to minimize costs and control the specifications and delivery schedules of new equipment… This segment is also key to our vertical integration efforts…" Methode Electronics Inc., Q2 2012 Earnings Call, Dec 08, 2011: "We see the opportunity for meaningful improvement in our margins once the vertical integration project is complete… We believe this vertical integration will not only enhance quality, mitigate supply risk but also improve our gross margins on the production of center consoles. We are on track in attempt to complete the integration of the operation by the end of fiscal 2012."

[34] The list of keywords related to vertical integration include: "vertical integration", "vertically integrated", "acquire suppliers", "vertical acquisitions", "firm boundary", "in-house production", "in-house manufacturing", "reduce outsourcing", "outsource less", and their variations.

significantly positive coefficients on *Treat* × *Post* are in line with my prediction that firms affected by the California Act increase the number of business segments. In columns 3-4 of Table 11 Panel B, I use the natural logarithmic version of the number of business segments (*Business Seg Num Ln*) as the dependent variable and find consistent results.

Another conjecture is that since firms become more vertically integrated in supply chains, their products might share more similarities with their suppliers'. To test this hypothesis, I calculate the mean and median value of text-based product similarity score between the focal firm and firms in its upstream industries, using the pairwise product similarity score developed by Hoberg and Phillips (2010, 2016). The results in Table 11 Panel C support my prediction that customer firms' product descriptions become more similar to those in their upstream industries.

Besides, I delve deeper into activities beyond vertical acquisitions by specifically examining strategic alliances, which focal firms can participate in to enhance vertical integration and gain improved control over their supply chains. Strategic alliances are collaborative arrangements between two or more companies that have decided to pool resources to undertake a mutually beneficial project, involving the exchange or codevelopment of products, technologies, or services (Gulati and Singh 1998; Gibbons and Roberts 2013). Strategic alliances can take many forms, ranging from simple non-equity agreements to more formal arrangements involving equity ownership and shared managerial control over joint activities (Chan et al. 1997). Compared to the pure supplier-customer relationship, forming strategic alliances provides focal firms with more control over their production processes and supply chains. I get data on strategic alliance activity from the SDC Platinum and merge it with my main sample.[35] Consistent with prior studies (e.g.,

[35] I use a broader definition of strategic alliances, encompassing various forms such as joint ventures, strategic alliances, research and development agreements, sales and marketing agreements, manufacturing agreements, supply agreements, licensing and distribution agreements, and more (Bodnaruk et al. 2013).

Bodnaruk et al. 2013; Fich et al. 2014; Kepler 2021; Frattaroli and Herpfer 2023), I measure firms' strategic alliance activity using two firm-year level proxies, including an indicator variable of entering into at least one new strategic alliance (*Strategic Alliance Dummy*) and a logarithmic variable (*Strategic Alliance Num*). In line with my prediction, Table 11 Panel D reveals that treated firms increase strategic alliance activity after the California Act, relative to control firms. Overall, the results in Table 11 complement my previous analyses on vertical acquisitions, overall vertical integration, and production outsourcing, by suggesting that firms exhibit enhanced vertical integration in multiple dimensions.

[Insert Table 11 about here]

5.4 Validation tests: Regulatory costs of the California Act

An underlying assumption in my study is that the California Act imposes regulatory costs on affected firms, such as elevated litigation risk and other pressure from stakeholders. Although this assumption is supported by anecdotal evidence and cross-sectional tests, in this subsection, I conduct a series of tests to validate this assumption. First, I provide some descriptive evidence by showing Google Search Trends of the term "human trafficking" and newspaper articles from LexisNexis about supply chain human trafficking litigation in California. The figures in Appendix C suggest a surge in both public attention on human trafficking issues and supply chain human trafficking litigation in California, following the adoption of the California Act.

Second, I explore the market reaction to the two final legislative events resulting in the passage and implementation of the California Act: the official passage date by the California Senate (August 30, 2010) and the date when this legislation was signed into law (September 30, 2010) (Birkey et al. 2018).[36] As the univariate and regression tests in Table 12 Panels A-B show,

[36] See http://www.leginfo.ca.gov/pub/09-10/bill/sen/sb_0651-0700/sb_657_bill_20100831_enrolled.pdf.

the significantly negative market reaction among treated firms relative to control firms suggests that investors realize the potential costs induced by this new legislation.

Third, I examine whether treated firms did face increased costs following the adoption of the California Act, particularly in the form of heightened litigation risk related to human rights issues. I construct three proxies based on corporate disclosure and media coverage of litigation and human trafficking topics, which captures firms' exposure and incidents concerning litigation risk and human rights issues. Specifically, the first two proxies capture firms' discussion on litigation risk (*Litigation 10-K*) and human trafficking (*Trafficking 10-K*) in their 10-K filings, and the third proxy, *Litigation Media*, reflects the media coverage of litigation and lawsuits, where firms are identified as defendants. Table 12 Panel C presents the results of a modified Eq. (1) using each of these three proxies as the dependent variable, and the coefficients on *Treat* × *Post* are significantly positive across all three proxies. Table 12 Panel D and Figure 4 present the dynamic treatment effect, supporting the parallel trend assumption. Overall, the results in Table 12 Panels C-D and Figure 4 suggest a substantial increase in treated firms' discussion on their litigation risk and human trafficking, as well as their incidents of litigation covered by media outlets, which validates the assumption that the California Act induces costs to affected firms.

[Insert Table 12 and Figure 4 about here]

6 Robustness Tests

6.1 Robustness tests of the identification strategy

To further mitigate concerns that my inferences are driven by underlying discrepancies between treated firms and control firms, I employ two commonly used matching methods: entropy balancing matching and propensity score matching (Hainmueller 2012; McMullin and Schonberger 2020, 2022). I use entropy balancing approach to reweight my treated and control

samples by matching firms on all control variables with 0.01 tolerance. To conduct propensity score matching, I first estimate a probit regression using *Treat* as the dependent variable and all control variables as independent variables. Then I rely on K-nearest-neighbor matching (K = 5) with replacement within 0.01 caliper. Alternatively, I conduct a similar propensity score matching approach additionally requiring matched treated and control firms to share the same two-digit SIC industry code. As Table 13 Panel A tabulates, the coefficients on *Treat* × *Post* remain significantly positive across different matching approaches, strengthening my main inferences.[37]

To control for state-level characteristics that might drive the results, I additionally include state-level related fixed effects and display the results in Table 13 Panel B. Specifically, in columns 1-2, I include state × fiscal year fixed effects to control for time-varying, state-level characteristics. In column 3, I include state × industry × fiscal year fixed effects to further control for time- and industry-varying, state-level characteristics. As Table 13 Panel B presents, my main inferences remain similar across different combinations of fixed effect structures.

To further rule out concerns that my results are contaminated by some unobservable factors in California in which most treated firms are headquartered, I test the robustness of my results keeping firms headquartered in selected states that potentially share more similarities and tabulate the results in Table 13 Panel C. First, I only keep firms headquartered in California and its bordering states (i.e., Oregon, Nevada, and Arizona), assuming these geographically proximate states share similar characteristics. Second, to ensure that firms in my sample share similar economic conditions in their headquarters states, I keep firms in top 20 states with highest GDP in

[37] For brevity, the robustness tests in Tables 13-14 using *Vertical Dummy* as the dependent variable are not tabulated, although the results are consistent.

2010, the year before the adoption of the California Act.[38] Third, I exclude firms headquartered in California. As Table 13 Panel C shows, my main inferences remain consistent after restricting my sample to firms headquartered in selected states that share more similarities.

Although my main analyses support the parallel trend assumption, there still exist some concerns that the global financial crisis affected treated and control firms differently in the pre-regulation period. I alleviate these concerns by restricting my sample to the period from 2009 onwards. The results in Table 13 Panel D reveal that my main inferences remain consistent after dropping the global financial crisis period.

To further mitigate concerns that unobservable differences between treated sample and control sample may drive the results, I limit my sample to a set of firms whose sales are within a small bandwidth of $100 million threshold, since they share more similarities in many dimensions such as the economic and political environment (Krishnan et al. 2015). Columns 1-2 (3-4) of Table 13 Panel E present the results of focusing on firms with sales ranging from $25-175 ($50-150) million, which are consisent with my main findings. Overall, the results in Table 13 support the robustness of my identification strategy and reassure main inferences.

[Insert Table 13 about here]

6.2 Additional robustness tests

I conduct a set of additional robustness tests. First, I examine the robustness of my main findings to alternative definitions of vertical acquisitions. The results in Table 14 Panel A suggest that my inferences are not sensitive to alternative thresholds of classifying vertical acquisitions (e.g., 0%, 0.5%, 5%). Second, Table 14 Panel B presents consistent evidence using the deal value

[38] Top 20 states with highest GDP in 2010 include: California, Texas, New York, Florida, Illinois, Pennsylvania, Ohio, New Jersey, Virginia, North Carolina, Georgia, Massachusetts, Michigan, Washington, Maryland, Indiana, Minnesota, Missouri, Tennessee, and Colorado (in the descending order of GDP). Data are obtained from the U.S. BEA.

of vertical acquisitions as alternative dependent variables. In untabulated analyses, to address concerns about discrepancies between firms engaging in acquisitions and those not, I restrict my sample to firms with active acquisition activities and find consistent evidence. I also use Poisson and negative binomial regression models to estimate and get consistent evidence, considering that the linear regression model assumption of normally distributed error terms may be violated as the number of acquisitions is a count variable (e.g., Huizinga and Voget 2009; Arikan and Stulz 2016).

[Insert Table 14 about here]

7 Conclusions

This study investigates whether and how supply chain disclosure regulations shape firms' vertical boundaries. I employ a disclosure regulation enacted in California, which requires firms to disclose their efforts to combat labor law violations in supply chains. This disclosure regulation imposes a set of potential costs on firms, especially increased litigation risk due to the legal responsibility for suppliers' treatment of workers, reputational costs from consumers, and costs of supply chain information acquisition and monitoring. I hypothesize and document that treated firms make more vertical acquisitions following the disclosure regulation, relative to control firms. The surge in vertical acquisitions is largely driven by the spree in upstream vertical acquisitions. Cross-sectionally, I find that the effect is concentrated among firms facing greater pressure from stakeholders including plaintiffs, consumers, NGOs, and shareholder activists. The effect is also stronger for firms for which disclosing supply chain information is costlier, specifically, firms sourcing from countries or industries with labor abuses, and firms with higher asset specificity.

Utilizing two firm-year level measures of overall vertical integration provides evidence that corroborates my main inferences. Specifically, treated firms' text-based vertical integration score and value-added ratio increase following the California Act, relative to control firms',

suggesting that treated firms become overall more vertically integrated across supply chains. I also find that treated firms reduce their production outsourcing and reliance on suppliers, reflected as the reduction in the number of suppliers and outsourcing amount estimated by a stochastic production function. Exploiting an additional set of corporate level outcomes related to vertical integration, I find that following the California legislation, treated firms disclose more information about vertical integration activities in conference calls, possess more business segments, exhibit higher product similarity to firms in upstream industries, and enter into more strategic alliances. In addition, validation tests support my argument that the California Act imposes costs on affected firms, demonstrated as increased public attention on human trafficking, litigation on supply chain human trafficking, negative market reaction to the passage and implementation of this law, and firms' and journalists' discussion on human trafficking and litigation.

Collectively, my findings suggest that supply chain disclosure regulations incentivize firms to expand their vertical boundaries to gain more control over supply chains. My study contributes to multiple streams of literature, including (1) the effects of costs induced by disclosure regulations on corporate outcomes by filling the void in how disclosure shapes corporate boundaries; (2) vertical integration and corporate boundary decisions; (3) determinants of vertical acquisitions; and (4) real effects of nonfinancial disclosure. My findings are also relevant to policymakers who are promoting supply chain transparency.

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Appendix A Variable definitions

This table provides a detailed description of the procedures used to compute each variable used in the analyses. Data are obtained through the Securities Data Company (SDC) Platinum, U.S. Bureau of Economic Analysis (BEA), U.S. Environmental Protection Agency (EPA), U.S. Bureau of Labor Statistics (BLS), U.S. Department of Labor, Exhibit 21 of Form 10-K, FactSet Revere Supply Chain Relationships, Violation Tracker, S&P Capital IQ, RavenPack, Compustat, and CRSP. All continuous variables are winsorized at the 1st and 99th percentiles of their distributions.

Primary dependent variables:

Variable	Definition
Vertical Dummy	An indicator variable equal to one if the firm makes vertical acquisitions for the current fiscal year, and zero otherwise. Vertical acquisitions are defined as acquisitions with vertical relatedness coefficient equal to or higher than 1%, and the acquirer and the target are not in the same two-digit SIC industry. I use the 2012 BEA Input-Output (I/O) Accounts data to construct a measure of vertical relatedness between any two industries. First, I calculate the amount of output required from industry *i* to produce one dollar's worth of industry *j*'s output (v_{ij}). Then I calculate its corollary (amount of output required from industry *j* to produce one dollar of output in industry *i* (v_{ji})). The vertical relatedness coefficient (V_{ij}) is maximum of these two metrics (i.e., v_{ij} and v_{ji}). As the BEA uses the NAICS codes in the 2012 I/O Accounts data, I rely on the crosswalk table of BEA industry codes and NAICS codes and the crosswalk table of SIC codes and NAICS codes for the matching. The BEA I/O Accounts data are obtained from the BEA's website: https://www.bea.gov/industry/inputoutput-accounts-data.
Vertical Num	The number of vertical acquisitions the firm makes for the current fiscal year.

Primary independent and control variables:

Variable	Definition
Treat	An indicator variable equal to one if the firm is categorized as "doing business in California", has sales of at least $100 million in 2008-2010, and operates in a manufacturing or retail industry, and zero otherwise. I categorize a firm as "doing business in California" if it satisfies any of the following conditions: (1) the firm is either headquartered or incorporated in California; (2) the firm has the fraction of the firm's factories in California is greater than 20 percent, which is identified based on its toxic emission records in the EPA toxic release inventory (TRI) database; (3) the fraction of the firm's subsidiaries in California (relative to other states and countries) on Exhibit 21 of Form 10-K is greater than 20 percent.
Post	An indicator variable equal to one from fiscal year 2011 onwards, and zero otherwise.
Size	The natural log of the firm's book value of assets at the prior fiscal year-end.
Age	The natural log of the firm's age. The firm's age is computed as the number of years since the firm first entered Compustat.
R&D	The firm's research and development expense for the current fiscal year scaled by total assets at the prior fiscal year-end.
PPE	The firm's net property, plant, and equipment scaled by total assets at the prior fiscal year-end.
Leverage	The firm's long-term debt and short-term debt scaled by total assets at the prior fiscal year-end.
ROA	The firm's net income for the current fiscal year scaled by total assets at the prior fiscal year-end.
Cash	The firm's cash and short-term investments scaled by total assets at the prior fiscal year-end.
Loss	An indicator variable equal to one if the firm's net income for the current fiscal year is negative, and zero otherwise.
Sales Growth	The growth rate of the firm's sales for the current fiscal year relative to sales for the prior fiscal year.

Appendix A (continued)

Additional dependent variables:

Variable	Definition
Up Vertical Dummy	An indicator variable equal to one if the firm makes upstream vertical acquisitions for the current fiscal year, and zero otherwise. Upstream vertical acquisitions are defined in a similar way to vertical acquisitions except that the vertical relatedness coefficient is only based on v_{ij} (*i* denotes the target's industry and *j* denotes the acquirer's industry).
Up Vertical Num	The number of upstream vertical acquisitions the firm makes for the current fiscal year.
Down Vertical Dummy	An indicator variable equal to one if the firm makes downstream vertical acquisitions for the current fiscal year, and zero otherwise. Downstream vertical acquisitions are defined in a similar way to vertical acquisitions except that the vertical relatedness coefficient is only based on v_{ji} (*i* denotes the target's industry and *j* denotes the acquirer's industry).
Down Vertical Num	The number of downstream vertical acquisitions the firm makes for the current fiscal year.
Non-Vertical Dummy	An indicator variable equal to one if the firm makes non-vertical acquisitions for the current fiscal year, and zero otherwise. Non-vertical acquisitions are defined as acquisitions either (1) with the vertical relatedness coefficient equal to 0; or (2) where the acquirer and the target are in the same two-digit SIC industry.
Non-Vertical Num	The number of non-vertical acquisitions the firm makes for the current fiscal year.
Vertical Integration Score	Text-based firm-year level measure of vertical integration developed by Frésard et al. (2020). The vertical integration score indicates the potential of the given firm's products to be vertically related to the other products sold by the same firm.
Value-Added Ratio	The firm's income components scaled by sales for the current fiscal year. Income components include depreciation and amortization, pension and retirement expenses, staff expenses, interest expenses, rental expenses, and finished goods inventories. Sales exclude net income and income taxes.
Suppliers Num	The natural log of one plus the number of suppliers of the firm for the current fiscal year.
Outsourcing	The natural log of the firm's production outsourcing amount for the current fiscal year. The production outsourcing amount is estimated based on a stochastic production function following Kovach et al. (2023). I estimate the following stochastic Cobb-Douglas production function: $$ln(COGS_{i,t}) = ln(A_{ind,t}) + \beta_1\, ln(PPE_{i,t}) + \beta_2\, ln(EMP_{i,t}) - u_{i,t} + v_{i,t}$$ where $u_{i,t}$ is a non-negative technical inefficiency term, assumed to follow a half-normal distribution, and its variance is modeled as a linear function of intangible assets and the most recent three years' investments into R&D and capital expenditures. $A_{ind,t}$ is an industry-specific technology factor. I perform a separate regression of the equation above for each year within industry-clustered standard errors, with each regression having a separate $A_{ind,t}$ intercept for each two-digit SIC manufacturing industry (SIC codes 2000-3999). *Outsourcing* is calculated as the summation of $ln(A_{ind,t})$ and $v_{i,t}$.
Vertical Calls	The natural log of one plus the number of vertical integration-related conference calls hosted by the firm for the current fiscal year. A vertical integration-related conference call is defined as a conference call mentioning at least one of the keywords on vertical integration in its presentation part: "vertical integration", "vertically integrated", "acquire suppliers", "vertical acquisitions", "firm boundary", "in-house production", "in-house manufacturing", "reduce outsourcing", "outsource less", and their variations.
Vertical Words	The natural log of one plus the number of words on vertical integration in the presentation part of conference calls hosted by the firm for the current fiscal year.
Vertical/Total Words	The natural log of one plus the ratio of the number of words on vertical integration to total number of words in the presentation part of conference calls hosted by the firm for the current fiscal year. The ratio is multiplied by 10,000 for ease of interpretation.
Vertical/Total Sent	The natural log of one plus the ratio of the number of sentences on vertical integration to total number of sentences in the presentation part of conference calls hosted by the firm for the current fiscal year. The ratio is multiplied by 10,000 for ease of interpretation.
Business Seg Num	The number of the firm's business segments for the current fiscal year.

Appendix A (continued)

Additional dependent variables: (continued)

Variable	Definition
Business Seg Num Ln	The natural log of the number of the firm's business segments for the current fiscal year.
Product Similarity Mean	The mean of text-based product similarity score between the firm and firms in its upstream industries. Upstream industries are identified as two-digit SIC industries of the firm's suppliers. Data on pairwise product similarity score are developed by Hoberg and Phillips (2010, 2016).
Product Similarity Median	The median of text-based product similarity score between the firm and firms in its upstream industries.
Strategic Alliance Dummy	An indicator variable equal to one if the firm enters into at least one strategic alliance for the current fiscal year, and zero otherwise.
Strategic Alliance Num	The natural log of one plus the number of new strategic alliances the firm enters into for the current fiscal year.
CAR	The firm's cumulative abnormal return over days (-2, +2) around the event date, based on Fama-French three factors and momentum.
Litigation 10-K	The natural log of one plus the number of words on litigation in the firm's 10-K for the current fiscal year. Keywords include "litigation" and "lawsuit".
Trafficking 10-K	The natural log of one plus the number of words on human trafficking in the firm's 10-K for the current fiscal year. Keywords include "slavery", "trafficking", "labor", "human", and "forced".
Litigation Media	The natural log of one plus the number of media articles on litigation about the firm for the current fiscal year. Media articles on litigation satisfy all of the following conditions: (1) relevance score is 100; (2) the firm is identified as a defendant; (3) the article is classified as any of the following topics: regulatory-investigation, legal-issues, sanctions, sanctions-guidance, government-administration, judiciary, law-enforcement, legislative, defamation, verdict, settlement, and legislature.
Vertical Amt Ln	The natural log of one plus the total million-dollar amount of vertical acquisitions the firm makes for the current fiscal year.
Vertical Amt/Asset	The total million-dollar amount of vertical acquisitions the firm makes for the current fiscal year scaled by total assets at the prior fiscal year-end. This variable is multiplied by 100 for ease of interpretation.
Vertical Amt/Sale	The total million-dollar amount of vertical acquisitions the firm makes scaled by sales for the current fiscal year. This variable is multiplied by 100 for ease of interpretation.

Additional independent and control variables:

Variable	Definition
High Litigation-Risk Industry	An indicator variable equal to one if the firm belongs to an industry with high litigation risk (SIC codes 2833-2836, 3570-3577, 3600-3674, 5200-5961), and zero otherwise.
Plaintiff-Lawyer Views	The total number of EDGAR views of the firm's filings by plaintiffs' law firms for the current fiscal year. Data are obtained from Kartapanis and Yust (2022).
Advertising Exp/Sale	The firm's advertising expense scaled by sales for the current fiscal year.
PCE Score	The percentage of output sold to Personal Consumption Expenditure (PCE) at six-digit NAICS industry level. Data are obtained from Delgado and Mills (2017).
NGO	The proportion of firms covered by KnowTheChain within each two-digit SIC industry.
Prosocial Shareholder	The firm's high social norm foreign institutional ownership for the current fiscal year, following Dyck et al. (2019).
Sourcing Ctr Risk	The median of the total frequency of purchases from countries with high labor risk within each two-digit SIC industry. Data are obtained from Hoberg and Moon (2017, 2019).
Sourcing Ind Risk	The total frequency of relationships with suppliers from industries with high labor risk. Industries with high labor risk are industries with labor violations in the highest tercile.
Ind Asset Specificity	The ratio of total R&D expenditures to total sales within the two-digit SIC industry.
Firm Asset Redeploy	Firm-year level measure of asset redeployability developed by Kim and Kung (2016).
Pseudo Post	An indicator variable equal to one from fiscal year 2004 onwards, and zero otherwise.

Appendix B Examples of California Transparency Act Statement

Example 1: Cisco Systems Inc (NYSE: CSCO)

Excerpts from "Cisco Statement on the Prevention of Modern Slavery and Human Trafficking":

We source from a global network of suppliers and partners. Hundreds of suppliers provide parts that go into our products, and then manufacturing partners assemble and test finished products; provide logistical services; and collect, refurbish, and/or recycle products at the end of their useful life. The major elements of our materials supply chain are briefly described below. Our Supplier List provides more insight on the global suppliers with which we partner.

Verification: We evaluate and address risks of human trafficking and slavery through conformance to the Code and using a risk-based approach. When new suppliers are onboarded, Cisco assesses for modern slavery risks, which includes an assessment of whether the supplier employs vulnerable workers (for example, foreign migrant workers and young workers). If risks are identified, we follow up to determine if impacts need to be addressed prior to scaling business with the supplier.

Audits: We conduct third-party supplier audits using the VAP, or equivalent, or review audit reports through the RBA's audit sharing system and conduct unannounced audits as necessary. The audit process includes on-site inspections, document reviews, and worker and management interviews.

Certification: Suppliers must agree to comply with the Code as well as international standards and applicable laws and regulations when they enter into master purchasing agreements or equivalent terms and conditions with Cisco. This creates legally enforceable obligations, including in cases where the law is silent or allows practices that violate Cisco policies. We require suppliers to acknowledge the Code at the onset of the relationship.

Accountability: Non-conformance with the Code is taken very seriously. Cisco works with suppliers to develop corrective action plans, identify the root cause of the non-conformance, and strives to ensure that corrective actions are implemented in the shortest possible timeline. Corrective actions may include the immediate return of passports or facilitating reimbursement of paid recruitment fees within 90 days of discovery. Corrective actions are followed by preventative actions to ensure that non-conformances do not reoccur and to reduce future risk. Such actions may include ensuring the facility has a policy in place and workers are aware of the policy, and that contracts are clear and in a language workers can understand. Multiple teams collaborate to hold suppliers accountable and to ensure actions are completed by specified deadlines.

Training: Our strategy focuses on capability building for our suppliers and employees. We regularly engage suppliers across the globe to train on Code fundamentals. This helps us build awareness, propagate best practices, and focus on improvement. For suppliers, the contributions we make to RBA workshops and training content are mutually beneficial, ensuring understanding of policies and standards.

Example 2: Alamo Group (NYSE: ALG)

Excerpts from "California Transparency in Supply Chains Act Disclosure":

Currently, we do not: (1) engage in verification of product supply chains to evaluate or address risks of human trafficking and slavery; (2) conduct audits of suppliers to evaluate supplier compliance with anti-slavery and human trafficking standards; (3) require our suppliers to certify that they comply with anti-slavery and human trafficking laws in the country or countries in which they do business; (4) other than as set forth in our Code, maintain internal accountability standards and procedures for employees or contractors for failing to meet anti-slavery and human trafficking standards; or (5) provide company employees or management who have direct responsibility for supply chain management with training on anti-slavery and human trafficking laws.

Appendix B (continued)

Example 3: Chevron Corporation (NYSE: CVX)

Excerpts from "California Transparency in Supply Chains Act Disclosure":

Verification: Chevron engages in various activities to identify, assess, and manage supplier risk. Chevron's business units conduct health, safety, and environment (HSE) risk assessments prior to awarding supply contracts. Chevron does not outsource this process. This risk assessment process may include forced labor risks on a case-by-case basis at the discretion of the relevant business units. Chevron also communicates annually with the executive leadership of its largest suppliers.

Auditing: Through Chevron's Contractor Operational Excellence Management (COEM) process, business unit HSE audit teams work with suppliers identified as having high OE business risk-which includes potential social and community risk and may include forced labor risk-to increase accountability and continually improve their performance.

Certification: Chevron's current standard contract provisions require contractors, suppliers, and service providers to comply with all applicable laws, which includes laws regarding slavery and human trafficking of the country or countries in which they are doing business.

Accountability: Chevron maintains robust internal accountability standards and procedures for employees or contractors failing to meet company standards, including Chevron's Human Rights Policy. Non-compliance with our policies can result in discipline, up to and including termination.

Training: Training on Chevron's Human Rights Policy is provided to the individuals and functions we assess to be most likely to encounter issues related to human rights in higher-risk locations. Chevron's suite of human rights training, which addresses slavery and human trafficking issues, includes awareness-raising for employees and contractors, computer-based training for employees targeting key functions and regions, and ad hoc, location-specific training.

Example 4: ITT Inc (NYSE: ITT)

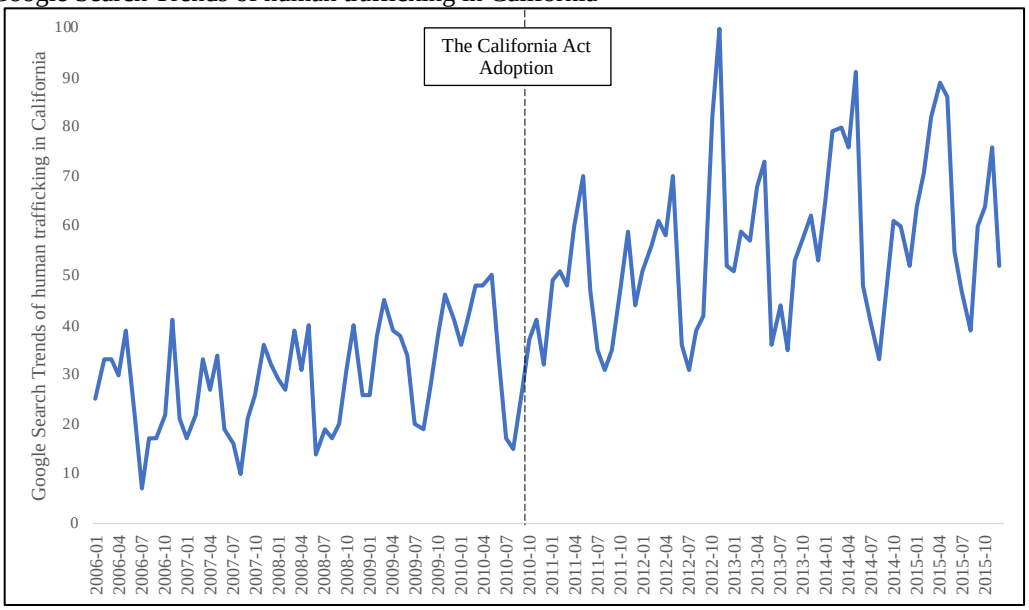
Excerpts from "California Transparency in Supply Chains Act Disclosure Statement":

1. Except as may be required by the FARs, ITT does not currently conduct third party verification of its supply chain to evaluate and address the risks of human trafficking and slavery.
2. Except as may be required by the FARs, ITT does not currently conduct supplier audits to specifically evaluate compliance with company standards on human trafficking and slavery.
3. ITT expects its suppliers to comply with the laws in the countries where they are doing business. Except as may be required by the FARs, ITT does not currently require supplier certification that specifically addresses slavery and human rights.
4. ITT maintains accountability standards and procedures for employees or contractors failing to meet legal requirements and company standards. ITT's Ethics and Compliance organization has an externally available helpline and web line for reporting concerns of any kind, as well as an ombudsman program that promotes reporting potential violations of law and company policy. Every report of potential misconduct is investigated, and outcomes are reported to ITT management.
5. ITT offers training on slavery and human trafficking to company employees and managers who have direct responsibility for supply chain management as part of its overall compliance program.

Appendix C Google Search Trends and media coverage around the adoption of the California Act

The figure in Panel A below plots the Google Search Trends of the term "human trafficking" in California during years 2006-2015. The figure in Panel B below plots the number of news articles about litigation on supply chain human trafficking in California during years 2000-2022. I identify news articles of interest from LexisNexis, which contain keywords from all of the following keyword groups: (1) "trafficking" or "slavery" or "human right" or "forced labor" or "forced labour" or "child labor" or "child labour"; (2) "litigation" or "litigate" or "lawsuit" or "class-action" or "plaintiff"; (3) "supply chain" or "supplier" or "import"; (4) "California".

Panel A: Google Search Trends of human trafficking in California



Panel B: Media coverage of litigation on supply chain human trafficking in California

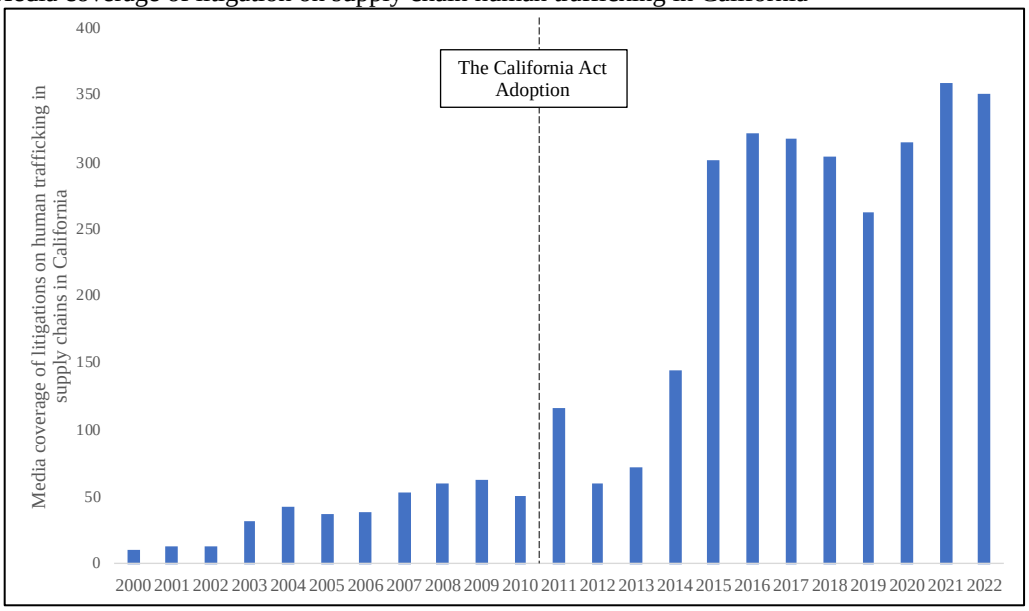
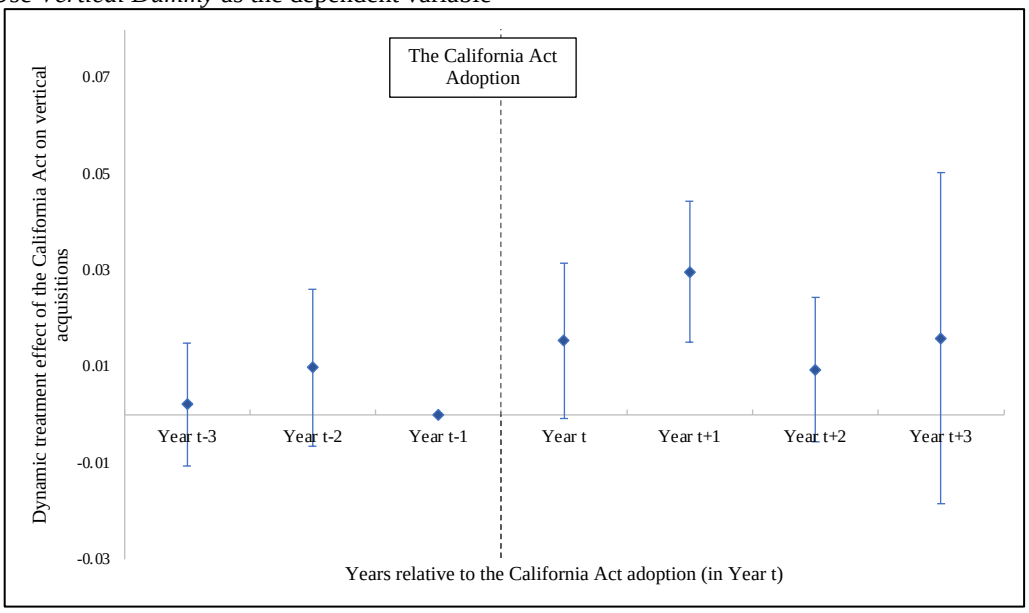


Figure 1 Dynamic treatment effect of the California Act on vertical acquisitions

The figure in Panel A (B) below reports the coefficients of an ordinary least squares regression investigating the effects of the California Act on vertical acquisitions in event time, using *Vertical Dummy* (*Vertical Num*) as the dependent variable. Formally, I estimate $Vertical\ Acq_{i,t} = \alpha + \beta_1\ Treat_i \times Year\ t\text{-}3_t + \beta_2\ Treat_i \times Year\ t\text{-}2_t + \beta_3\ Treat_i \times Year\ t_t + \beta_4\ Treat_i \times Year\ t\text{+}1_t + \beta_5\ Treat_i \times Year\ t\text{+}2_t + \beta_6\ Treat_i \times Year\ t\text{+}3_t + \beta_k Controls + \delta_i + \gamma_{ind \times t} + \epsilon_{i,t}$, where δ_i and $\gamma_{ind \times t}$ represent firm and industry × fiscal year fixed effects, respectively. In each panel, *Year t-3* (*Year t-2*, *Year t*, *Year t+1*, *Year t+2*, *Year t+3*) is an indicator variable equal to one for fiscal year 2008 (2009, 2011, 2012, 2013, 2014), and zero otherwise. Each point estimate is accompanied by a 90% confidence interval calculated based on standard errors clustered at the headquarters state level. Note that *Year t-1* has a coefficient of zero and no confidence interval because it serves as the benchmark period. All variables are defined in Appendix A.

Panel A: Use *Vertical Dummy* as the dependent variable



Panel B: Use *Vertical Num* as the dependent variable

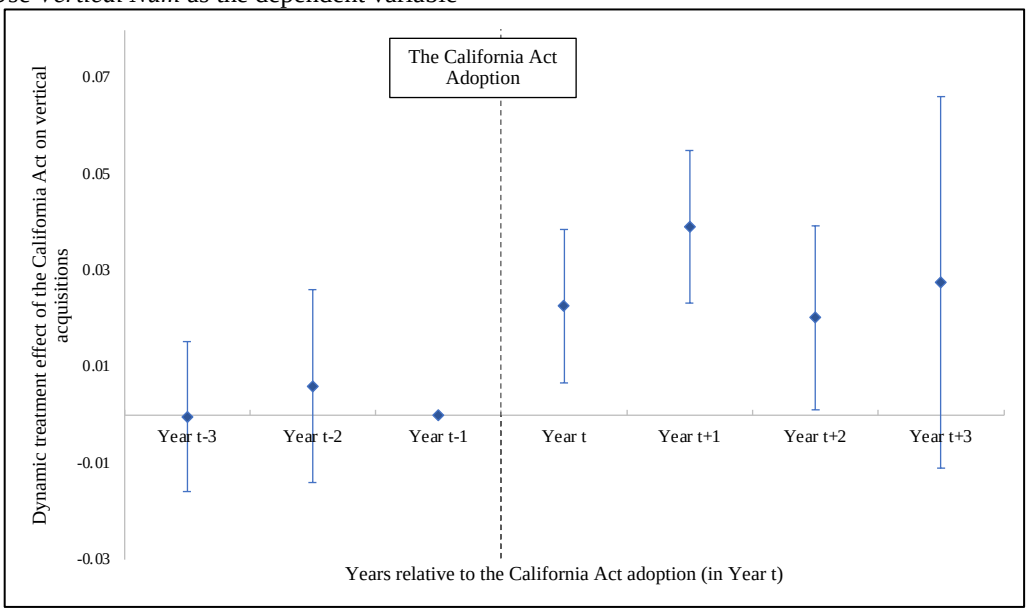
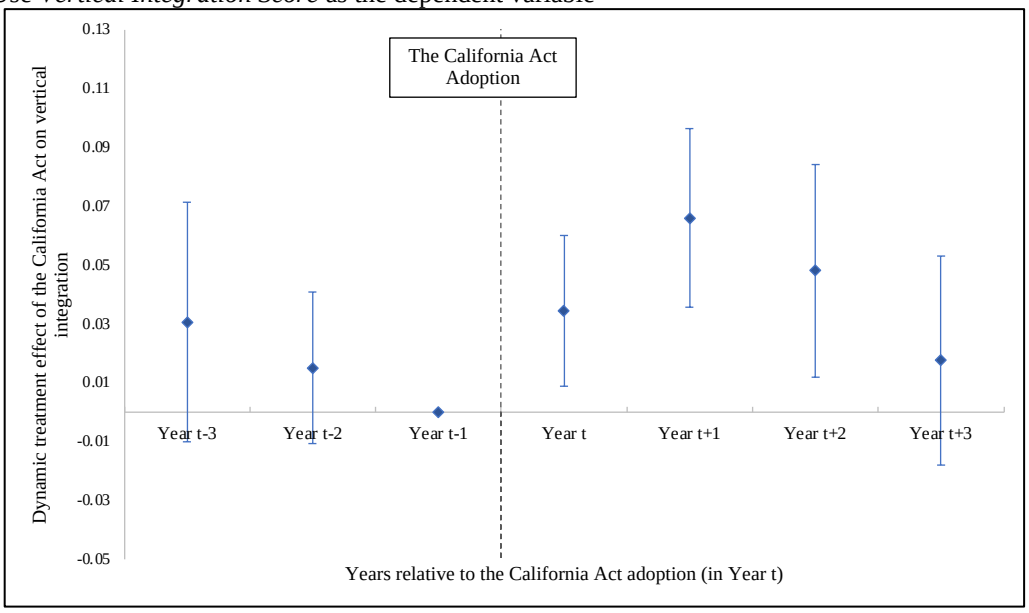


Figure 2 Dynamic treatment effect of the California Act on overall vertical integration

The figure in Panel A (B) below reports the coefficients of an ordinary least squares regression investigating the effects of the California Act on overall vertical integration in event time, using *Vertical Integration Score* (*Value-Added Ratio*) as the dependent variable. Formally, I estimate $Vertical\ Integration_{i,t} = \alpha + \beta_1\ Treat_i \times Year\ t\text{-}3_t + \beta_2\ Treat_i \times Year\ t\text{-}2_t + \beta_3\ Treat_i \times Year\ t_t + \beta_4\ Treat_i \times Year\ t\text{+}1_t + \beta_5\ Treat_i \times Year\ t\text{+}2_t + \beta_6\ Treat_i \times Year\ t\text{+}3_t + \beta_k Controls + \delta_i + \gamma_{ind \times t} + \epsilon_{i,t}$, where δ_i and $\gamma_{ind \times t}$ represent firm and industry × fiscal year fixed effects, respectively. *Year t-3* (*Year t-2*, *Year t*, *Year t+1*, *Year t+2*, *Year t+3*) is an indicator variable equal to one for fiscal year 2008 (2009, 2011, 2012, 2013, 2014), and zero otherwise. Each point estimate is accompanied by a 90% confidence interval calculated based on standard errors clustered at the headquarters state level. Note that *Year t-1* has a coefficient of zero and no confidence interval because it serves as the benchmark period. All variables are defined in Appendix A.

Panel A: Use *Vertical Integration Score* as the dependent variable



Panel B: Use *Value-Added Ratio* as the dependent variable

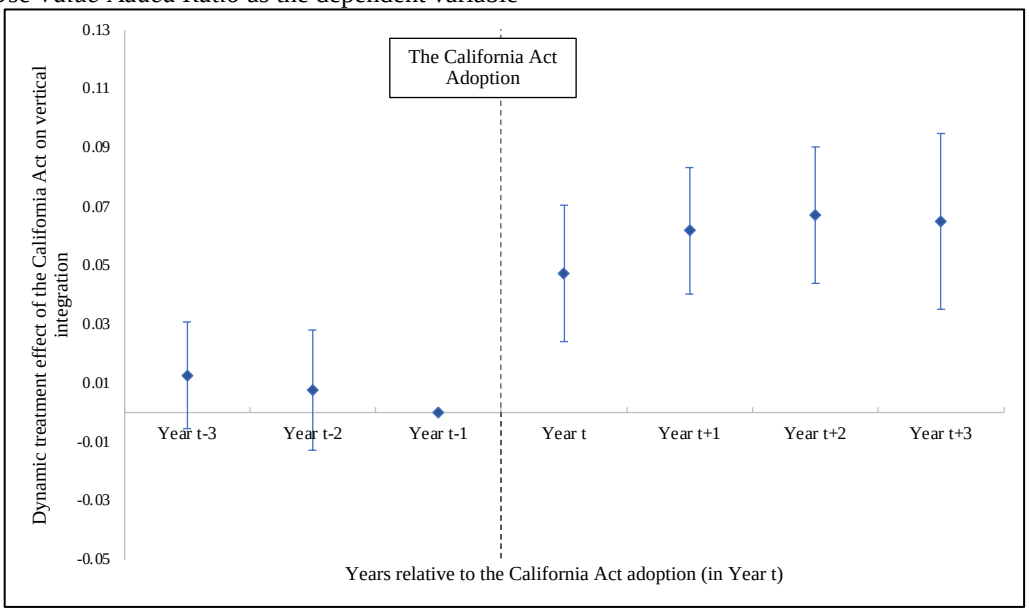
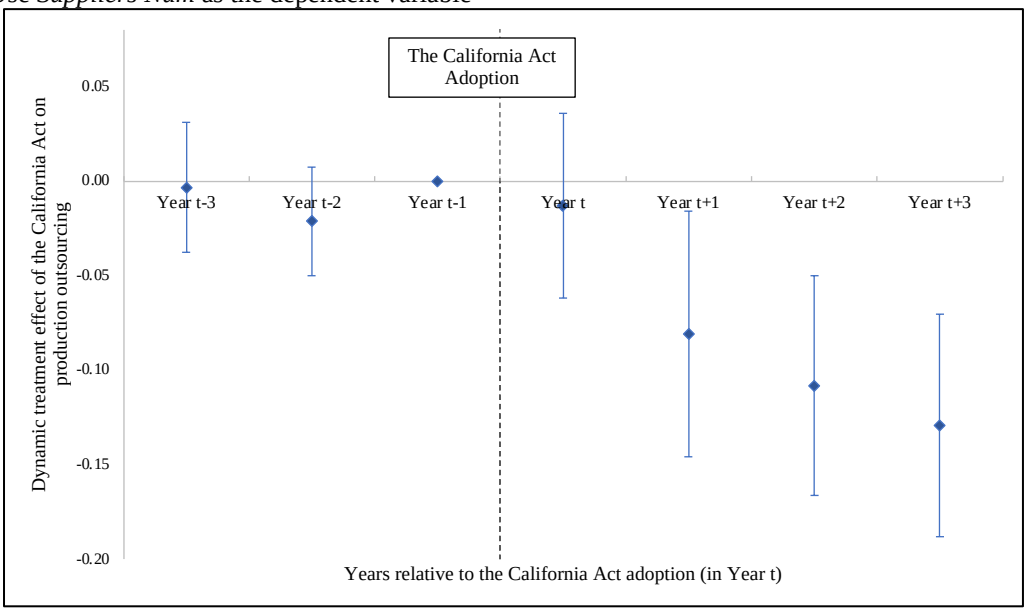


Figure 3 Dynamic treatment effect of the California Act on production outsourcing

The figure in Panel A (B) below reports the coefficients of an ordinary least squares regression investigating the effects of the California Act on production outsourcing in event time, using *Suppliers Num* (*Outsourcing*) as the dependent variable. Formally, I estimate $Production\ Outsourcing_{i,t} = \alpha + \beta_1\ Treat_i \times Year\ t\text{-}3_t + \beta_2\ Treat_i \times Year\ t\text{-}2_t + \beta_3\ Treat_i \times Year\ t_t + \beta_4\ Treat_i \times Year\ t\text{+}1_t + \beta_5\ Treat_i \times Year\ t\text{+}2_t + \beta_6\ Treat_i \times Year\ t\text{+}3_t + \beta_k Controls + \delta_i + \gamma_{ind \times t} + \epsilon_{i,t}$, where δ_i and $\gamma_{ind \times t}$ represent firm and industry × fiscal year fixed effects, respectively. *Year t-3* (*Year t-2*, *Year t*, *Year t+1*, *Year t+2*, *Year t+3*) is an indicator variable equal to one for fiscal year 2008 (2009, 2011, 2012, 2013, 2014), and zero otherwise. Each point estimate is accompanied by a 90% confidence interval calculated based on standard errors clustered at the headquarters state level. Note that *Year t-1* has a coefficient of zero and no confidence interval because it serves as the benchmark period. All variables are defined in Appendix A.

Panel A: Use *Suppliers Num* as the dependent variable



Panel B: Use *Outsourcing* as the dependent variable

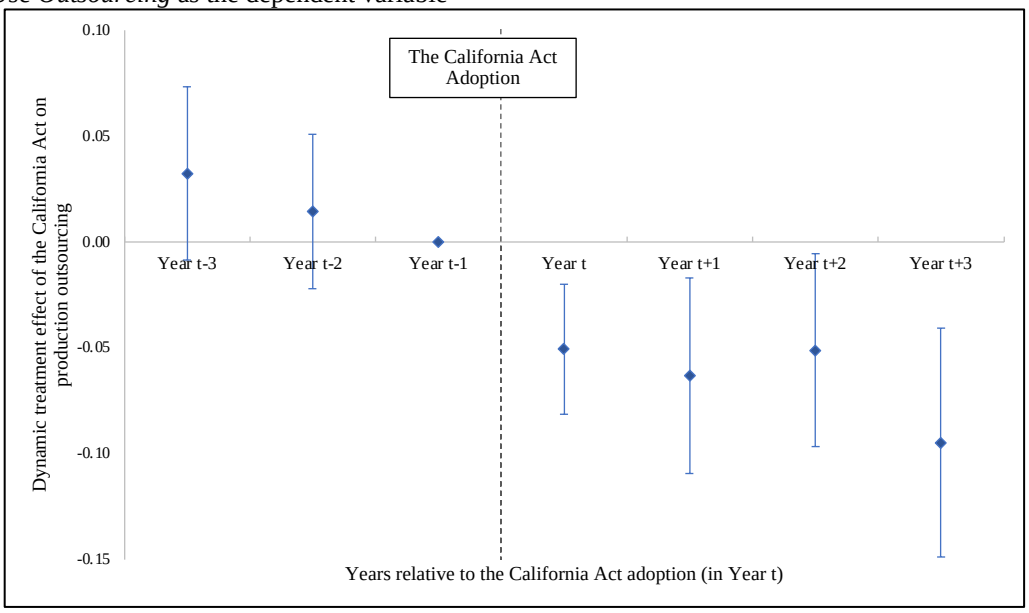
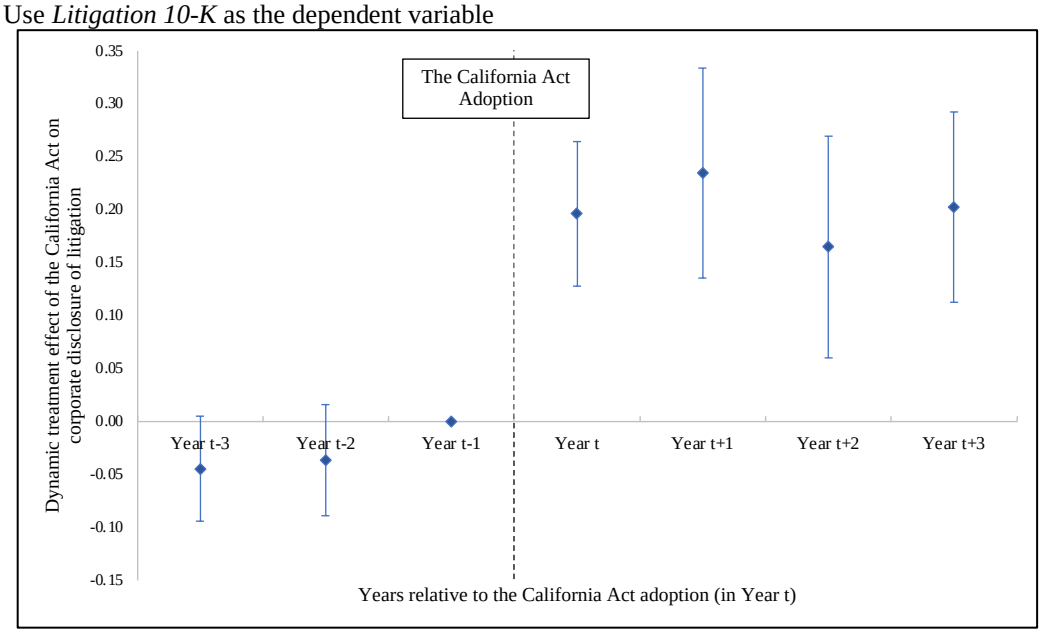


Figure 4 Validation tests: Regulatory costs of the California Act

The figure in Panel A (B, C) below reports the coefficients of an ordinary least squares regression investigating the effects of the California Act on corporate disclosure and media coverage of litigation and human trafficking in event time, using *Litigation 10-K* (*Trafficking 10-K*, *Litigation Media*) as the dependent variable. Formally, I estimate $Disclosure_{i,t} = \alpha + \beta_1\ Treat_i \times Year\ t\text{-}3_t + \beta_2\ Treat_i \times Year\ t\text{-}2_t + \beta_3\ Treat_i \times Year\ t_t + \beta_4\ Treat_i \times Year\ t\text{+}1_t + \beta_5\ Treat_i \times Year\ t\text{+}2_t + \beta_6\ Treat_i \times Year\ t\text{+}3_t + \beta_k Controls + \delta_i + \gamma_{ind \times t} + \epsilon_{i,t}$, where δ_i and $\gamma_{ind \times t}$ represent firm and industry × fiscal year fixed effects, respectively. *Year t-3* (*Year t-2*, *Year t*, *Year t+1*, *Year t+2*, *Year t+3*) is an indicator variable equal to one for fiscal year 2008 (2009, 2011, 2012, 2013, 2014), and zero otherwise. Each point estimate is accompanied by a 90% confidence interval calculated based on standard errors clustered at the headquarters state level. Note that *Year t-1* has a coefficient of zero and no confidence interval because it serves as the benchmark period. All variables are defined in Appendix A.

Panel A: Use *Litigation 10-K* as the dependent variable



Panel B: Use *Trafficking 10-K* as the dependent variable

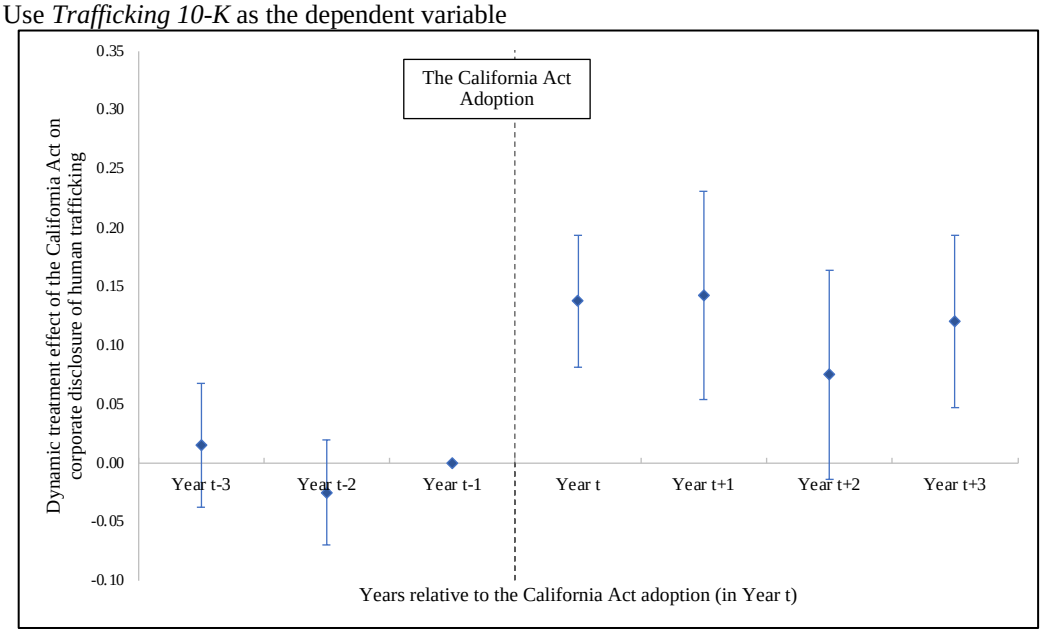


Figure 4 (continued)

Panel C: Use *Litigation Media* as the dependent variable

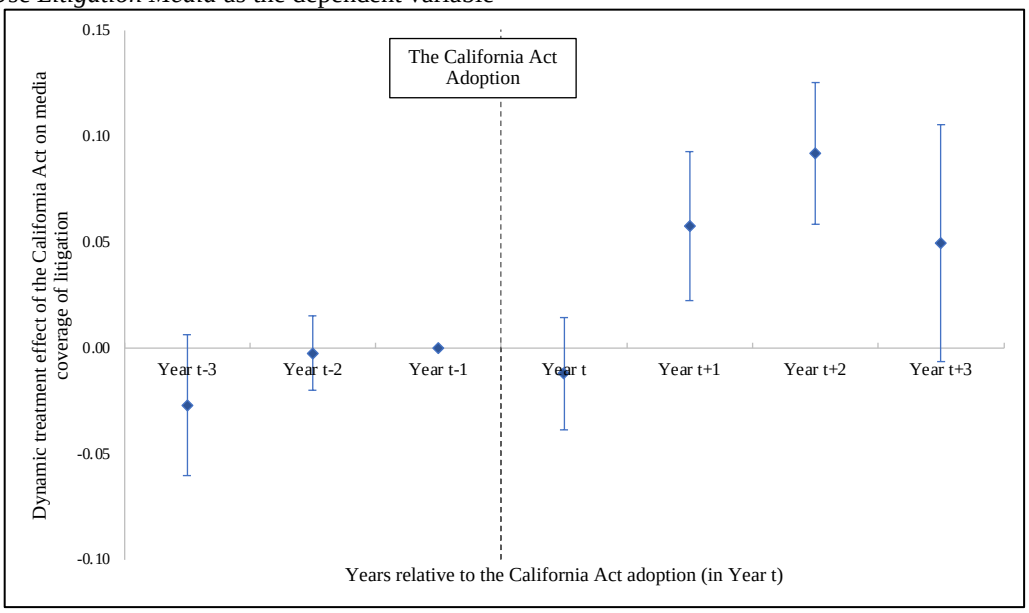


Table 1 Sample selection

Description	No. of firm-years dropped	No. of firm-years remaining
All fiscal firm-years covered by Compustat North America over 2008-2014		78,709
Exclude non-manufacturing and non-retail firms	(55,249)	23,460
Exclude firm-years with missing control variables	(3,864)	19,596
Exclude firms without observations in both the pre- and post-regulation periods	(2,885)	16,711
Final sample of firm-years		**16,711**
Final sample of unique firms		**2,615**

Table 2 Summary statistics

This table presents descriptive information for the sample and variables of interest. The sample consists of firm-years with the necessary data for the vertical acquisition tests during the fiscal years 2008 to 2014. Details of variable construction are contained in Appendix A.

Variables	N	Mean	SD	P25	P50	P75
Primary dependent variables:						
Vertical Dummy	16,711	0.030	0.171	0.000	0.000	0.000
Vertical Num	16,711	0.041	0.272	0.000	0.000	0.000
Primary independent variables:						
Treat	16,711	0.109	0.312	0.000	0.000	0.000
Post	16,711	0.555	0.497	0.000	1.000	1.000
Size	16,711	5.803	2.573	4.030	5.835	7.564
Age	16,711	2.848	0.753	2.398	2.890	3.367
R&D	16,711	0.087	0.178	0.000	0.018	0.091
PPE	16,711	0.221	0.186	0.077	0.169	0.321
Leverage	16,711	0.263	0.468	0.010	0.163	0.324
ROA	16,711	-0.136	0.663	-0.092	0.029	0.084
Cash	16,711	0.222	0.230	0.049	0.139	0.320
Loss	16,711	0.388	0.487	0.000	0.000	1.000
Sales Growth	16,711	0.128	0.608	-0.071	0.042	0.172

Table 3 Effect of the California Act on vertical acquisitions

This table presents the results examining the effect of the California Act on vertical acquisitions. Columns 1-3 (4-6) show the results using *Vertical Dummy* (*Vertical Num*) as the dependent variable. Columns 1, 2, 4, and 5 include firm and fiscal year fixed effects, and columns 3 and 6 include firm and industry × fiscal year fixed effects. The sample consists of firm-year observations from 2008-2014. All variables are defined in Appendix A. The *t*-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by headquarters state. *, **, *** indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed *t*-test.

Dependent variable:		*Vertical Dummy*			*Vertical Num*		
	Pr. Sign	(1)	(2)	(3)	(4)	(5)	(6)
Treat × *Post*	+	0.012*	0.013**	0.014**	0.025***	0.026***	0.026***
		(1.98)	(2.22)	(2.61)	(4.14)	(4.29)	(4.97)
Size			0.004	0.004		0.005	0.006
			(1.34)	(1.30)		(1.41)	(1.67)
Age			0.007	0.008		0.009	0.010
			(0.62)	(0.71)		(0.54)	(0.60)
R&D			0.003	0.002		0.004	0.005
			(0.31)	(0.23)		(0.43)	(0.54)
PPE			-0.048*	-0.046		-0.056*	-0.055
			(-1.87)	(-1.67)		(-1.77)	(-1.41)
Leverage			-0.005*	-0.005*		-0.007**	-0.008**
			(-1.73)	(-1.80)		(-2.01)	(-2.29)
ROA			-0.002	-0.003*		-0.002	-0.003
			(-1.64)	(-1.83)		(-1.50)	(-1.45)
Cash			0.024***	0.026***		0.019*	0.022**
			(3.05)	(3.20)		(1.91)	(2.17)
Loss			-0.008*	-0.007		-0.013**	-0.010
			(-1.72)	(-1.46)		(-2.29)	(-1.60)
Sales Growth			0.003	0.004*		0.005*	0.006**
			(1.53)	(1.79)		(1.95)	(2.04)
Firm FE		Yes	Yes	Yes	Yes	Yes	Yes
Year FE		Yes	Yes	No	Yes	Yes	No
Industry × Year FE		No	No	Yes	No	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		16711	16711	16711	16711	16711	16711
Adj. R-Squared		0.234	0.235	0.235	0.327	0.328	0.330

Table 4 Dynamic treatment effect of the California Act on vertical acquisitions

This table presents the results examining the effect of the California Act on vertical acquisitions in event time. Columns 1-3 (4-6) show the results using *Vertical Dummy* (*Vertical Num*) as the dependent variable. Columns 1, 2, 4, and 5 include firm and fiscal year fixed effects, and columns 3 and 6 include firm and industry × fiscal year fixed effects. The sample consists of firm-year observations from 2008-2014. All variables are defined in Appendix A. The *t*-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by headquarters state. *, **, *** indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed *t*-test. Note that *Year t-1* is omitted because it serves as the benchmark period.

Dependent variable:		*Vertical Dummy*			*Vertical Num*		
	Pr. Sign	(1)	(2)	(3)	(4)	(5)	(6)
Treat × *Year t-3*	0	-0.001	0.000	0.002	-0.008	-0.006	-0.000
		(-0.10)	(0.05)	(0.29)	(-0.76)	(-0.61)	(-0.03)
Treat × *Year t-2*	0	0.007	0.008	0.010	-0.001	-0.000	0.006
		(0.66)	(0.75)	(1.01)	(-0.09)	(-0.00)	(0.50)
Treat × *Year t*	0/+	0.012	0.012	0.015	0.016	0.017	0.023**
		(0.96)	(1.04)	(1.59)	(1.31)	(1.43)	(2.38)
Treat × *Year t+1*	+	0.030***	0.032***	0.030***	0.039***	0.041***	0.039***
		(3.80)	(4.11)	(3.38)	(4.91)	(5.29)	(4.15)
Treat × *Year t+2*	0/+	0.003	0.005	0.009	0.015	0.018	0.020*
		(0.30)	(0.56)	(1.05)	(1.27)	(1.51)	(1.77)
Treat × *Year t+3*	0/+	0.009	0.011	0.016	0.018	0.021	0.028
		(0.42)	(0.55)	(0.77)	(0.77)	(0.91)	(1.20)
Controls		No	Yes	Yes	No	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes	Yes	Yes
Year FE		Yes	Yes	No	Yes	Yes	No
Industry × Year FE		No	No	Yes	No	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		16711	16711	16711	16711	16711	16711
Adj. R-Squared		0.234	0.235	0.235	0.327	0.327	0.330

Table 5 Cross-sectional analyses: The influence of stakeholder pressure

This table presents the results examining the influence of stakeholder pressure on the effect of the California Act on vertical acquisitions, using *Vertical Num* as the dependent variable. Panel A (B, C) shows the results using litigation risk (reputational costs, activist groups) as the cross-sectional sample-split, proxied by *High Litigation-Risk Industry* and *Plaintiff-Lawyer Views* (*Advertising Exp/Sale* and *PCE Score*, *NGO* and *Prosocial Shareholder*). All specifications include firm and fiscal year fixed effects. All variables are defined in Appendix A. Sample sizes vary based on availability of cross-sectional variables. The *t*-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by headquarters state. *, **, *** indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed *t*-test.

Panel A: Litigation risk

Dependent variable:		*Vertical Num*			
Partition variable:		*High Litigation-Risk Industry*		*Plaintiff-Lawyer Views*	
Subsample:		Low	High	Low	High
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	0, +	0.009	0.038***	0.007	0.038***
		(0.80)	(8.05)	(0.68)	(4.47)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	Yes	Yes	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		9617	7094	7718	7298
Adj. R-Squared		0.359	0.224	0.395	0.297

Panel B: Reputational costs

Dependent variable:		*Vertical Num*			
Partition variable:		*Advertising Exp/Sale*		*PCE Score*	
Subsample:		Low	High	Low	High
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	0, +	0.012	0.048***	0.010	0.045***
		(1.21)	(3.51)	(1.36)	(3.90)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	Yes	Yes	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		3869	3824	8243	7504
Adj. R-Squared		0.416	0.140	0.235	0.414

Panel C: Activist groups

Dependent variable:		*Vertical Num*			
Partition variable:		*NGO*		*Prosocial Shareholder*	
Subsample:		Low	High	Low	High
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	0, +	0.011	0.036***	0.009	0.031***
		(0.92)	(8.62)	(1.08)	(4.12)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	Yes	Yes	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		9186	7525	5993	6031
Adj. R-Squared		0.379	0.212	0.395	0.249

Table 6 Cross-sectional analyses: The influence of other vertical integration incentives

This table presents the results examining the influence of other vertical integration incentives on the effect of the California Act on vertical acquisitions, using *Vertical Num* as the dependent variable. Panel A (B) shows the results using supply chain sourcing risk (asset specificity) as the cross-sectional sample-split, proxied by *Sourcing Ctr Risk* and *Sourcing Ind Risk* (*Ind Asset Specificity* and *Firm Asset Redeploy*). All specifications include firm and fiscal year fixed effects. All variables are defined in Appendix A. Sample sizes vary based on availability of cross-sectional variables. The *t*-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by headquarters state. *, **, *** indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed *t*-test.

Panel A: Supply chain sourcing risk

Dependent variable:		*Vertical Num*			
Partition variable:		*Sourcing Ctr Risk*		*Sourcing Ind Risk*	
Subsample:		Low	High	No	Yes
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	0, +	0.006	0.041***	0.002	0.036***
		(0.60)	(5.36)	(0.19)	(3.92)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	Yes	Yes	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		8682	8029	5555	5225
Adj. R-Squared		0.404	0.260	0.225	0.234

Panel B: Asset specificity

Dependent variable:		*Vertical Num*			
Partition variable:		*Ind Asset Specificity*		*Firm Asset Redeploy*	
Subsample:		Low	High	High	Low
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	0, +	0.015	0.027***	0.012	0.032***
		(0.91)	(5.09)	(0.99)	(4.49)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	Yes	Yes	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		3413	13225	8125	8094
Adj. R-Squared		0.369	0.307	0.283	0.365

Table 7 Effect of the California Act on upstream vs downstream vertical acquisitions

This table presents the results examining the effect of the California Act on upstream and downstream vertical acquisitions. Panel A shows the results focusing on upstream vertical acquisitions, with columns 1-2 (3-4) showing the results using *Up Vertical Dummy* (*Up Vertical Num*) as the dependent variable. Panel B shows the results focusing on downstream vertical acquisitions, with columns 1-2 (3-4) showing the results using *Down Vertical Dummy* (*Down Vertical Num*) as the dependent variable. In each panel, columns 1 and 3 include firm and fiscal year fixed effects, and columns 2 and 4 include firm and industry × fiscal year fixed effects. The sample consists of firm-year observations from 2008-2014. All variables are defined in Appendix A. The *t*-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by headquarters state. *, **, *** indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed *t*-test.

Panel A: Upstream vertical acquisitions

Dependent variable:		*Up Vertical Dummy*		*Up Vertical Num*	
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	+	0.013**	0.014***	0.021***	0.022***
		(2.51)	(2.68)	(4.26)	(4.77)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		16711	16711	16711	16711
Adj. R-Squared		0.198	0.198	0.274	0.275

Panel B: Downstream vertical acquisitions

Dependent variable:		*Down Vertical Dummy*		*Down Vertical Num*	
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	?	0.001	0.002	0.013**	0.012**
		(0.38)	(0.58)	(2.43)	(2.46)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		16711	16711	16711	16711
Adj. R-Squared		0.250	0.249	0.356	0.359

Table 8 Falsification tests

This table presents the results of falsification tests. Panel A shows the results examining the effect of the California Act on non-vertical acquisitions, with columns 1-2 (3-4) showing the results using *Non-Vertical Dummy* (*Non-Vertical Num*) as the dependent variable. Panel B shows the results examining the effect of the pseudo regulation on vertical acquisitions, with columns 1-2 (3-4) showing the results using *Vertical Dummy* (*Vertical Num*) as the dependent variable. In each panel, columns 1 and 3 include firm and fiscal year fixed effects, and columns 2 and 4 include firm and industry × fiscal year fixed effects. The sample in Panel A (B) consists of firm-year observations from 2008-2014 (2001-2007), with fiscal year 2011 (2004) as the policy year. All variables are defined in Appendix A. The *t*-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by headquarters state. *, **, *** indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed *t*-test.

Panel A: The effect of the California Act on non-vertical acquisitions

Dependent variable:		*Non-Vertical Dummy*		*Non-Vertical Num*	
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	0	0.009	0.009	0.019	0.017
		(0.97)	(0.95)	(1.00)	(1.25)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		16711	16711	16711	16711
Adj. R-Squared		0.287	0.285	0.311	0.310

Panel B: The effect of the pseudo regulation on vertical acquisitions

Dependent variable:		*Vertical Dummy*		*Vertical Num*	
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Pseudo Post*	0	-0.001	0.001	-0.006	-0.002
		(-0.30)	(0.19)	(-1.26)	(-0.38)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		21179	21179	21179	21179
Adj. R-Squared		0.204	0.203	0.287	0.288

Table 9 Effect of the California Act on overall vertical integration

This table presents the results examining the effect of the California Act on overall vertical integration. Panel A (B) shows the results of the average (dynamic) treatment effect, with columns 1-2 using *Vertical Integration Score* as the dependent variable and columns 3-4 using *Value-Added Ratio* as the dependent variable. In each panel, columns 1 and 3 include firm and fiscal year fixed effects, and columns 2 and 4 include firm and industry × fiscal year fixed effects. The sample consists of firm-year observations from 2008-2014. All variables are defined in Appendix A. The *t*-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by headquarters state. *, **, *** indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed *t*-test. Note that in Panel B, *Year t-1* is omitted because it serves as the benchmark period.

Panel A: Average treatment effect

Dependent variable:		*Vertical Integration Score*		*Value-Added Ratio*	
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	+	0.034***	0.027**	0.030**	0.053***
		(2.99)	(2.08)	(2.07)	(3.98)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		10053	10053	16127	16127
Adj. R-Squared		0.891	0.890	0.856	0.865

Panel B: Dynamic treatment effect

Dependent variable:		*Vertical Integration Score*		*Value-Added Ratio*	
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Year t-3*	0	0.027	0.031	0.019	0.013
		(1.35)	(1.26)	(0.96)	(1.16)
Treat × *Year t-2*	0	0.020	0.015	-0.004	0.008
		(1.52)	(0.99)	(-0.32)	(0.63)
Treat × *Year t*	0/+	0.038***	0.034**	0.033**	0.047***
		(3.04)	(2.26)	(2.14)	(3.42)
Treat × *Year t+1*	+	0.065***	0.066***	0.036**	0.062***
		(3.56)	(3.64)	(2.11)	(4.81)
Treat × *Year t+2*	0/+	0.063***	0.048**	0.039*	0.067***
		(3.38)	(2.24)	(2.00)	(4.85)
Treat × *Year t+3*	0/+	0.032*	0.018	0.028	0.065***
		(1.69)	(0.83)	(1.26)	(3.64)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		10053	10053	16127	16127
Adj. R-Squared		0.891	0.890	0.856	0.865

Table 10 Effect of the California Act on production outsourcing

This table presents the results examining the effect of the California Act on production outsourcing. Panel A (B) shows the results of the average (dynamic) treatment effect, with columns 1-2 (3-4) using *Suppliers Num* (*Outsourcing*) as the dependent variable. In each panel, columns 1 and 3 include firm and fiscal year fixed effects, and columns 2 and 4 include firm and industry × fiscal year fixed effects. The sample consists of firm-year observations from 2008-2014. All variables are defined in Appendix A. The *t*-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by headquarters state. *, **, *** indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed *t*-test. Note that in Panel B, *Year t-1* is omitted because it serves as the benchmark period.

Panel A: Average treatment effect

Dependent variable:		*Suppliers Num*		*Outsourcing*	
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	-	-0.116***	-0.073**	-0.082***	-0.079***
		(-3.45)	(-2.21)	(-3.50)	(-3.42)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		11727	11727	14326	14326
Adj. R-Squared		0.842	0.845	0.922	0.923

Panel B: Dynamic treatment effect

Dependent variable:		*Suppliers Num*		*Outsourcing*	
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Year t-3*	0	0.011	-0.003	0.042	0.032
		(0.50)	(-0.16)	(1.40)	(1.32)
Treat × *Year t-2*	0	-0.010	-0.021	0.028	0.014
		(-0.46)	(-1.25)	(1.07)	(0.65)
Treat × *Year t*	0/-	-0.012	-0.013	-0.041**	-0.051***
		(-0.43)	(-0.45)	(-2.64)	(-2.77)
Treat × *Year t+1*	-	-0.097***	-0.081**	-0.067**	-0.063**
		(-2.91)	(-2.08)	(-2.66)	(-2.28)
Treat × *Year t+2*	0/-	-0.164***	-0.108***	-0.053**	-0.051*
		(-4.93)	(-3.12)	(-2.24)	(-1.88)
Treat × *Year t+3*	0/-	-0.200***	-0.129***	-0.078**	-0.095***
		(-5.31)	(-3.67)	(-2.52)	(-2.93)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		11727	11727	14326	14326
Adj. R-Squared		0.842	0.845	0.922	0.923

Table 11 Effect of the California Act on other vertical integration outcomes

This table presents the results examining the effect of the California Act on other vertical integration outcomes. Panel A shows the results examining the effect of the California Act on voluntary disclosure of vertical integration activities, with columns 1-2 (3-4, 5-6, 7-8) using *Vertical Calls* (*Vertical Words*, *Vertical/Total Words*, *Vertical/Total Sent*) as the dependent variable. In Panel A, columns 1, 3, 5, and 7 include firm and fiscal year fixed effects, and columns 2, 4, 6, and 8 include firm and industry × fiscal year fixed effects. Panel B shows the results examining the effect of the California Act on the number of business segments, with columns 1-2 (3-4) using *Business Seg Num* (*Business Seg Num Ln*) as the dependent variable. Panel C shows the results examining the effect of the California Act on the product similarity to firms in upstream industries, with columns 1-2 (3-4) using *Product Similarity Mean* (*Product Similarity Median*) as the dependent variable. Panel D shows the results examining the effect of the California Act on strategic alliances, with columns 1-2 (3-4) using *Strategic Alliance Dummy* (*Strategic Alliance Num*) as the dependent variable. In Panels B-D, columns 1 and 3 include firm and fiscal year fixed effects, and columns 2 and 4 include firm and industry × fiscal year fixed effects. The sample consists of firm-year observations from 2008-2014. All variables are defined in Appendix A. Sample sizes vary based on availability of dependent variables. The *t*-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by headquarters state. *, **, *** indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed *t*-test.

Panel A: Voluntary disclosure of vertical integration activities

Dependent variable:		*Vertical Calls*		*Vertical Words*		*Vertical/Total Words*		*Vertical/Total Sent*	
	Pr. Sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treat × *Post*	+	0.028***	0.028***	0.038***	0.036***	0.019***	0.019*	0.064***	0.064**
		(3.76)	(3.18)	(4.30)	(3.23)	(2.72)	(1.82)	(2.71)	(2.09)
Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No	Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes	No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		13628	13628	13628	13628	13628	13628	13628	13628
Adj. R-Squared		0.346	0.346	0.358	0.357	0.353	0.352	0.334	0.333

Panel B: Number of business segments

Dependent variable:		*Business Seg Num*		*Business Seg Num Ln*	
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	+	0.060**	0.051*	0.019**	0.015
		(2.57)	(1.97)	(2.18)	(1.63)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		16711	16711	16711	16711
Adj. R-Squared		0.868	0.868	0.892	0.892

Table 11 (continued)

Panel C: Product similarity to firms in upstream industries

Dependent variable:		*Product Similarity Mean*		*Product Similarity Median*	
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	+	0.177*	0.318***	0.216**	0.363**
		(1.87)	(3.00)	(2.02)	(2.68)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		5410	5410	5410	5410
Adj. R-Squared		0.823	0.820	0.817	0.815

Panel D: Strategic alliances

Dependent variable:		*Strategic Alliance Dummy*		*Strategic Alliance Num*	
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	+	0.027***	0.031***	0.012	0.016**
		(3.73)	(4.20)	(1.48)	(2.33)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		16711	16711	16711	16711
Adj. R-Squared		0.283	0.282	0.376	0.375

Table 12 Validation tests: Regulatory costs of the California Act

This table presents the results of validation tests on regulatory costs of the California Act. Panels A-B present the market reaction to the passage and implementation of the California Act. Panel A presents the univariate tests and Panel B presents the regression tests using *CAR* as the dependent variable and including industry fixed effects. Panels C-D present the results examining the effect of the California Act on corporate disclosure and media coverage of litigation and human trafficking. Panel C (D) presents the results of the average (dynamic) treatment effect, with column 1 (2, 3) using *Litigation 10-K* (*Trafficking 10-K*, *Litigation Media*) as the dependent variable and including firm and industry × fiscal year fixed effects. All variables are defined in Appendix A. The *t*-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by headquarters state. *, **, *** indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed *t*-test. Note that in Panel D, *Year t-1* is omitted because it serves as the benchmark period.

Panel A: Average market reaction to the California Act

Event date:	30-Aug-2010			30-Sep-2010		
	Treated Firms	Control Firms	Difference	Treated Firms	Control Firms	Difference
	(1)	(2)	(3)	(4)	(5)	(6)
CAR	-0.011***	-0.001	-0.010***	-0.003	0.002	-0.005*
	(-3.42)	(-0.90)	(-2.80)	(-1.03)	(1.24)	(-1.46)
No. of observations	240	1429		241	1433	

Panel B: Market reaction to the California Act

Dependent variable:		*CAR*	
Event date:		30-Aug-2010	30-Sep-2010
	Pr. Sign	(1)	(2)
Treat	-	-0.008***	-0.006***
		(-4.18)	(-2.77)
Controls		Yes	Yes
Industry FE		Yes	Yes
S.E. clustered by hq. state		Yes	Yes
No. of observations		1669	1674
Adj. R-Squared		0.043	0.009

Panel C: Average treatment effect on corporate disclosure and media coverage of litigation and human trafficking

Dependent variable:		*Litigation 10-K*	*Trafficking 10-K*	*Litigation Media*
	Pr. Sign	(1)	(2)	(3)
Treat × *Post*	+	0.227***	0.124***	0.053***
		(4.58)	(3.06)	(3.22)
Controls		Yes	Yes	Yes
Firm FE		Yes	Yes	Yes
Industry × Year FE		Yes	Yes	Yes
S.E. clustered by hq. state		Yes	Yes	Yes
No. of observations		16711	16711	16711
Adj. R-Squared		0.860	0.874	0.230

Table 12 (continued)

Panel D: Dynamic treatment effect on corporate disclosure and media coverage of litigation and human trafficking

Dependent variable:		*Litigation 10-K*	*Trafficking 10-K*	*Litigation Media*
	Pr. Sign	(1)	(2)	(3)
Treat × Year t-3	0	-0.045	0.015	-0.027
		(-1.50)	(0.49)	(-1.35)
Treat × Year t-2	0	-0.036	-0.025	-0.002
		(-1.16)	(-0.94)	(-0.23)
Treat × Year t	0/+	0.196***	0.137***	-0.012
		(4.81)	(4.10)	(-0.75)
Treat × Year t+1	+	0.235***	0.142***	0.058***
		(3.95)	(2.69)	(2.75)
Treat × Year t+2	0/+	0.165**	0.075	0.092***
		(2.64)	(1.41)	(4.57)
Treat × Year t+3	0/+	0.202***	0.120***	0.050
		(3.77)	(2.76)	(1.48)
Controls		Yes	Yes	Yes
Firm FE		Yes	Yes	Yes
Industry × Year FE		Yes	Yes	Yes
S.E. clustered by hq. state		Yes	Yes	Yes
No. of observations		16711	16711	16711
Adj. R-Squared		0.860	0.874	0.230

Table 13 Robustness tests of the identification strategy

This table presents the results of robustness tests of the identification strategy examining the effect of the California Act on vertical acquisitions, using *Vertical Num* as the dependent variable. Panel A shows the results for matched samples. Columns 1-2 show the results after entropy balancing the sample of control firm-years to match the distribution of the sample of treated firm-years, with 0.01 tolerance. Columns 3-6 show the results using a K-nearest-neighbor (K = 5) propensity score matched sample with replacement within 0.01 caliper (columns 5-6 additionally require matched firms to belong to the same two-digit SIC industry). Panel B shows the results controlling for state-level related fixed effects. Besides firm fixed effects, column 1 (2, 3) includes state × fiscal year (industry × fiscal year and state × fiscal year, state × industry × fiscal year) fixed effects. Panel C shows the results keeping firms headquartered in selected states, with columns 1-2 (3-4, 5-6) keeping firms headquartered in California and its bordering states (top 20 states with highest GDP in 2010, non-California states). Panel D shows the results excluding the global financial crisis period, with columns 1-2 (3-4) using 2009-2014 (2009-2013) as the time window. Panel E shows the results of focusing on a small bandwidth around $100 million sales threshold, with columns 1-2 (3-4) keeping firms with sales in $27-175 million ($50-150 million). In Panels A and C (D and E), columns 1, 3, and 5 (1 and 3) include firm and fiscal year fixed effects, and columns 2, 4, and 6 (2 and 4) include firm and industry × fiscal year fixed effects. All variables are defined in Appendix A. The *t*-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by headquarters state. *, **, *** indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed *t*-test.

Panel A: Matching analyses

Dependent variable:		*Vertical Num*					
Matching method:		Entropy Balanced Matching		Propensity Score Matching		Propensity Score Matching w/i Industry	
	Pr. Sign	(1)	(2)	(3)	(4)	(5)	(6)
Treat × *Post*	+	0.023***	0.024***	0.032***	0.030***	0.036***	0.033***
		(3.89)	(4.27)	(2.75)	(3.66)	(2.96)	(4.03)
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		16711	16711	7380	7379	6312	6301
Adj. R-Squared		0.322	0.329	0.334	0.340	0.342	0.365

Panel B: Control for state-level related fixed effects

Dependent variable:		*Vertical Num*		
	Pr. Sign	(1)	(2)	(3)
Treat × *Post*	+	0.029***	0.029***	0.019**
		(4.66)	(3.91)	(2.12)
Controls		Yes	Yes	Yes
Firm FE		Yes	Yes	Yes
Industry × Year FE		No	Yes	No
State × Year FE		Yes	Yes	No
State × Industry × Year FE		No	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes
No. of observations		16663	16663	14955
Adj. R-Squared		0.331	0.334	0.329

Table 13 (continued)

Panel C: Keep firms headquartered in selected states

Dependent variable:		*Vertical Num*					
Selected states:		CA and Bordering States		Top 20 States w/ Highest GDP		Non-CA	
	Pr. Sign	(1)	(2)	(3)	(4)	(5)	(6)
Treat × *Post*	+	0.020**	0.018*	0.017***	0.018***	0.036**	0.035**
		(3.57)	(3.02)	(3.73)	(4.38)	(2.35)	(2.12)
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		2764	2738	10689	10689	14416	14416
Adj. R-Squared		0.230	0.231	0.219	0.222	0.236	0.237

Panel D: Exclude the global financial crisis period

Dependent variable:		*Vertical Num*			
Time window:		2009-2014		2009-2013	
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	+	0.024***	0.024***	0.025***	0.025***
		(3.72)	(4.17)	(6.99)	(7.50)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		14323	14323	12239	12239
Adj. R-Squared		0.317	0.320	0.352	0.355

Panel E: Small bandwidth around $100 million sales threshold

Dependent variable:		*Vertical Num*			
Sales range:		$27-175 Million		$50-150 Million	
	Pr. Sign	(1)	(2)	(3)	(4)
Treat × *Post*	+	0.020***	0.024***	0.021***	0.027***
		(4.37)	(4.66)	(3.19)	(3.69)
Controls		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes
No. of observations		5134	5109	3565	3540
Adj. R-Squared		0.106	0.102	0.099	0.099

Table 14 Additional robustness tests

This table presents the results of additional robustness tests examining the effect of the California Act on vertical acquisitions, using *Vertical Num* as the dependent variable. Panel A shows the results using alternative threshold to classify vertical acquisitions, with columns 1-2 (3-4, 5-6) defining vertical acquisitions as acquisitions with vertical relatedness coefficient > 0 (>= 0.5%, >= 5%). Panel B shows the results using the dollar amount of vertical acquisitions as the dependent variable, with columns 1-2 (3-4, 5-6) using *Vertical Amt Ln* (*Vertical Amt/Asset*, *Vertical Amt/Sale*) as the dependent variable. In each panel, columns 1, 3, and 5 include firm and fiscal year fixed effects, and columns 2, 4, and 6 include firm and industry × fiscal year fixed effects. All variables are defined in Appendix A. The *t*-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by headquarters state. *, **, *** indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed *t*-test.

Panel A: Alternative threshold of classifying vertical acquisitions

Dependent variable:		*Vertical Num*					
Vertical relatedness threshold:		>0		>=0.5%		>=5%	
	Pr. Sign	(1)	(2)	(3)	(4)	(5)	(6)
Treat × *Post*	+	0.046**	0.045**	0.029***	0.028***	0.013***	0.013***
		(2.32)	(2.35)	(3.68)	(3.80)	(3.48)	(3.78)
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		16711	16711	16711	16711	16711	16711
Adj. R-Squared		0.448	0.448	0.336	0.337	0.292	0.298

Panel B: Dollar amount of vertical acquisitions

Dependent variable:		*Vertical Amt Ln*		*Vertical Amt/Asset*		*Vertical Amt/Sale*	
	Pr. Sign	(1)	(2)	(3)	(4)	(5)	(6)
Treat × *Post*	+	0.063**	0.061**	0.068***	0.069***	0.085***	0.083***
		(2.35)	(2.37)	(3.08)	(2.92)	(3.21)	(3.13)
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes	Yes	Yes
Year FE		Yes	No	Yes	No	Yes	No
Industry × Year FE		No	Yes	No	Yes	No	Yes
S.E. clustered by hq. state		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		16711	16711	16711	16711	16589	16589
Adj. R-Squared		0.266	0.266	0.133	0.132	0.139	0.137