Employee or Independent Contractor?
Accountant Classification and Audit Outcomes

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Abstract: Relative to employees, independent contractors (ICs) offer operational flexibility and cost savings but have lower goal alignment with firms. We use a difference-in-differences research design around a Massachusetts law change that discourages usage of accountant ICs among audit firms but not client firms. We observe a large increase in employee accountants at audit firms in Massachusetts after the law change. We find that this exogenous change in worker classification from ICs to employees increases audit effectiveness (i.e., lower likelihood of annual financial restatements). We find stronger effects when the operational flexibility benefits of IC usage are less important for audit firms (i.e., for non-M&A active clients where the audit services demand is more certain, as well as for better resourced large audit firms and large local audit offices). To assess confounding effects of changes in accountant classification among client firms, we conduct several falsification tests that isolate settings where client firms may be more impacted by the law change than audit firms. We find no evidence that our findings are driven by changes in accountant classification among client firms. Our collective evidence is consistent with audit firm usage of employee accountants, rather than accountant ICs, leading to improvements in audit effectiveness.

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JEL classification: G38; J24; K31
Data availability: All data are available from public sources identified in the paper.

1.   Introduction

Independent contractors (ICs) account for most workers who are not regular employees and represent an increasingly large percentage of the workforce, particularly in sectors that require skilled professionals (PwC 2024). Each of the Big 4 public accounting firms makes use of ICs on audit engagements. For example, PwC maintains a separate online portal entitled "Flexible Talent Network (FTN)" aimed at ICs (see Appendix A), noting that "opportunities primarily exist at the senior associate and experienced associate levels within the assurance and tax lines of service".[1] IC usage is driven by audit firms' need for operational flexibility as well as workers' desire for work-life balance and varied professional experiences. Regulators recognize the importance of ICs for public company audits, with the PCAOB treating ICs as analogous to employees when defining the term "person associated with a public accounting firm" (PCAOB 2003) and the SEC echoing this congruity, "the independent contractor would report to the audit firm just like an employee of the firm, perform all procedures requested by the audit firm, have the work reviewed by members of the audit firm as if the independent contractor was an employee of the firm." (SEC 2004).

Concerns have been raised regarding the implications of audit firm reliance on non-regular workers, such as temporary and seasonal employees, on audit effectiveness (Clauskey and Vaux 1997; Doron 2013; Khavis, Krishnan, and Tipton 2022). Audit firms do not always provide sufficient organizational support for non-regular workers (Kornberger, Carter, and Ross-Smith 2010) and partners view their work as inferior (Johnson, Lowe, and Reckers 2008). The PCAOB asserts that ICs pose a distinct set of quality control risks (PCAOB 2024). Against this backdrop of increasing IC usage among audit firms and concerns about its implications, our study examines the impact of accountant worker classification (i.e., employee or IC) on audit effectiveness.

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[1]   EY (https://www.gignow.com/), KPMG (https://www.kpmguscareers.com/contractor/), and Deloitte (https://www2.deloitte.com/us/en/pages/careers/articles/join-deloitte-talent-networks.html) maintain similar portals.

ICs offer operational flexibility to audit firms as they can be leveraged during periods of high demand. ICs are not entitled to the same labor protections as employees, thereby facilitating savings on payroll taxes, unemployment insurance, worker compensation, and health insurance premiums, as well as training and benefit costs. Thus, IC usage could translate into greater audit effectiveness. On the other hand, lack of access to benefits, training, and labor protections as well as alienation from the audit team can result in lower goal alignment between ICs and audit firms.[2] Hence, IC usage could translate into lower audit effectiveness. Finally, to the extent that ICs are largely lower-level employees that represent an immaterial proportion of the total human capital deployed on an audit team, IC usage may not have any material impact on audit effectiveness.[3]

We use the 2004 Massachusetts Independent Contractor Law (MICL) to examine the impact of accountant classification on audit effectiveness. MICL makes classifying a worker as an IC rather than an employee difficult. Consequently, firms doing business in Massachusetts had to either reclassify ICs as employees or not renew the contracts of existing ICs and replace them with employees (Hwang and Kahle 2024). As noted by the Massachusetts Society of CPAs, MICL had a dramatic effect on ICs, "this law limits flexible work arrangements by making it virtually impossible to be classified as an independent contractor." We expect audit firms to comply with MICL given the large reputational and legal costs associated with worker lawsuits (Chen 2024).[4]

A labor shortage characterized the Massachusetts accountant labor market in 2003 as indicated by the press headline "Auditors: In Demand, New accounting regs and a need for senior people have area firms scrambling for talent" (Lerner 2003). The drivers of this labor shortage

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[2] In terms of the demographic makeup of ICs in audit firms, the Massachusetts Society of CPAs (2019) highlights these groups of workers, "young parents looking to reenter the workforce, young professionals and students looking to gain experience, older workers who want to scale back on their hours, and others seeking a better work-life balance."
[3] In 2005, ICs accounted for 7.4 percent of all U.S. workers per the Bureau of Labor Statistics (2005). We use survey data to estimate that, in the year 2005, ICs accounted for 7.6 percent of all workers at CPA firms in Massachusetts.
[4] Audit firms' use of accountant ICs was used as a specific example in legal advisories (Morse Law 2005). We confirmed this potential impact on audit firms by discussing MICL with senior labor lawyers and Big 4 audit partners.

included both supply (i.e., decline in accounting majors in the late 1990's) and demand (i.e., increased need for accountants at both audit and client firms due to SOX) factors (Duguay, Minnis, and Sutherland 2020). As audit firms were underinvested in employee accountants at this time, we expect the costs of ICs (i.e., lower goal alignment) to exceed the benefits (i.e., flexibility and cost savings). A legal intervention that mitigates the employee accountant labor shortage could improve audit effectiveness. After MICL, workers gain access to training, benefits, legal protections and are more integrated within the audit firm. As employees, these workers have better goal alignment with the audit firm, potentially resulting in improved audit effectiveness (Blann, Kleppe, and Moon 2024; Friedrich, Knechel, Sofla, and Zuiddman 2024; Nair, Abernethy, Jiang, and Lillis, 2024).

We descriptively validate that MICL increased employee usage among audit firms in Massachusetts. We benchmark changes in employees in CPA firms in MA (Figure 1) to adjacent states in New England (Figure 2). We observe a 20% increase in employees in CPA firms in MA relative to a change of 0% in geographically adjacent states.[5] It is possible that some of this increase is driven by other lines of business (e.g., tax, advisory) or non-CPA paraprofessionals (e.g., bookkeepers) that support accountants at CPA firms (Cascino, Tamayo, and Vetter, 2020). We take our analysis further and benchmark the number of "accountants and auditors" in MA (Figure 3) relative to adjacent states in New England (Figure 4). We observe a 20% increase in accountants and auditors in MA relative to a change of 0% in geographically adjacent states. When we compare accountants and auditors working specifically at CPA firms, we find increases of 29% in MA and 7% in geographically adjacent states, again suggesting an approximate 20% net increase in MA.

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[5] The use of geographically adjacent states allows us to assess worker flows across different states in the same region and facilitates comparisons to a similar-sized (i.e., total workers) accountant labor market. The New England region accounts for 9% of public company audit clients, with 6% in MA and 3% in the remaining New England states. Daines et al. (2021) note firms in California, which accounts for 20% of public company audit clients, act as a natural benchmark for firms in Massachusetts. From 2004 to 2005, we observe a 4% increase in CPA firm employment in CA (Figure 7). From 2004 to 2005, Duguay et al. (2020) show a 1% decrease in CPA firm employment nationally. Regardless of the benchmark, the 20% increase in CPA firm employment in MA between 2004 and 2005 is sizeable.

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Abraham, Hershbein, Houseman, and Truesdale (2023) note, "Good data on independent contracting, however, are sparse. Recent studies have used data from federal and state agencies for administrative purposes". Using de-identified administrative tax data from the IRS joint statistical program, Lim, Miller, Rich, and Wilking (2019) validate that Massachusetts firms had bottom tercile growth in IC usage from 2001 to 2016. While the IRS data is underreported, we corroborate this evidence for CPA firms. We observe a 10% decrease in the number of business establishments (or ICs) in MA (Figure 5) relative to a decrease of 1% in geographically adjacent states (Figure 6).

MICL is empirically advantageous. First, MICL is a plausibly exogenous shock to worker classification at audit firms. As noted by the Massachusetts Society of CPAs, "The law included a change to the Commonwealth's independent contractor statute in an effort to address potential misclassification of employees by public contractors. As determined through two Attorneys' General Advisories in 2004 and 2008, the test inadvertently applies to almost all occupations and industries, making it virtually impossible for an individual in Massachusetts to legally qualify as an independent contractor." Second, the Attorney General was clear in its intent to enforce MICL. MICL couples a law change with vigorous enforcement of that law, resulting in a powerful setting (Christensen, Hail, and Leuz 2013). Third, MICL represents a shock to accountant classification at audit, but not client, firms. Law firms note, "While a granite countertop installer can hire an accountant as an independent contractor to work for him/her for a few months in the spring each year, an accounting firm may not do so. This is because the accounting firm, unlike the granite counter installer, is in the business of providing accounting services – the very thing provided by the accountant hired as the independent contractor." (Bartulis Jr. 2019). Finally, Massachusetts includes the Boston-Cambridge-Quincy MSA, one of the five largest local audit office markets within the U.S (Beck, Francis, and Gunn 2018; Hoopes, Merkley, Pacelli, and Schroeder 2018).

Our analyses employ a sample of 18,489 firm-year observations from 2000 to 2008. Our difference-in-differences (DID) tests use the adoption of MICL in 2004. We include audit firm local office-level and client firm industry-by-year fixed effects. Restatements represent a powerful proxy of audit effectiveness (Defond and Zhang 2014; Rajgopal, Srinivasan, and Zheng 2021). We find that, after the adoption of MICL, clients of treated audit firms in Massachusetts experience a 2.1% decrease in the likelihood of restatements of annual financial reports. Restatements of quarterly financial reports (which are reviewed rather than audited) involve less audit firm involvement and are more attributable to the client firm (Srinivasan 2005). We thus conduct a falsification test using quarterly restatements and find no decrease in response to the law change.

In line with producer theory (Ayres, Kleppe, Shipman, and Stanfield 2024), we find that the improvement in audit effectiveness is stronger when operational flexibility benefits of IC usage are less important for audit firms (i.e., for non-M&A active clients where audit services demand is more certain, and for large audit firms and large local audit offices that are better resourced).

We focus on MICL as it is the most binding among similar U.S. state-level laws (Keohane and Schap 2021). Nonetheless, six other states implemented similar law changes applicable to a broad range of firms. We employ a stacked DID research design (Baker, Larcker, and Wang 2022) and find that these laws increase audit effectiveness. Importantly, these other states adopt between the years 2006 to 2013, mitigating concerns that regulatory events (e.g., SOX) drive our findings.

It is possible that client firms erroneously react to MICL by altering their composition of IC vs. employee accountants. Under this alternative explanation, we should observe improvements to a firm's internal information environment (IIE) in response to MICL. We conduct a falsification test and find no changes in IIE around MICL (Gallemore and Labro 2015). We also use a placebo treatment sample of client firms headquartered in Massachusetts that are audited by audit firm

offices outside of Massachusetts. Under the alternative explanation, even though the audit firm is not impacted by MICL by virtue of being located outside of Massachusetts, we should still observe changes in audit effectiveness. We find no changes in audit effectiveness using the placebo treatment sample. Finally, nine states passed laws that apply narrowly to construction-sector firms. Under the alternative explanation, even though audit firms are not impacted by the laws, we should still observe changes in audit effectiveness. We find these laws do not impact audit effectiveness.

We examine California's 2020 adoption of Assembly Bill 5 (AB5). As with MICL, AB5 makes it difficult to classify workers as ICs rather than employees. AB5 allows for occupational exemptions, including for accountants holding an active CPA license from the state of California. The exemption does not extend to non-CPAs nor to out-of-state CPAs. Relative to MICL, which potentially impacts both CPAs and non-CPAs working at audit firms, AB5 represents a setting in which to test whether a worker classification law that applies to non-CPAs, but exempts most CPAs, at audit firms has similar effects. We find no evidence of AB5 impacting audit effectiveness.

We find no evidence of pre-treatment trends in the four years leading up to MICL adoption. We find that post-treatment effects coincide with the timing of the 2004 and 2008 Attorney General advisories. We measure audit effectiveness using performance-adjusted discretionary accruals (Kothari, Leone, and Wasley 2005) and meeting or beating earnings benchmarks (Francis and Yu 2009) and find similar inferences. Our restatement results are also robust to entropy balancing.

Our assumption is that MICL improves worker access to benefits, training, and/or labor protections, resulting in better goal alignment between workers and audit firms. While our sample period precludes use of Glassdoor to capture audit office-level worker job satisfaction (Khavis and Krishnan 2021), we can measure individual-level worker job satisfaction (Madsen and Piao 2021). Using survey data, we find suggestive evidence of MICL increasing accountants' job satisfaction.

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Our findings contribute to two streams of literature. First, an interdisciplinary literature spanning finance, labor economics, operations management, as well as strategy examines IC usage (Davis-Blake and Uzzi 1993; Abraham and Taylor 1996; Kesavan et al. 2014; Katz and Kreuger 2019; Kuzmina 2023; Hwang and Khale 2024). Accountants are often referenced in this literature as being a natural setting to examine IC usage, yet the accounting literature remains largely silent on this worker type. We contribute to this literature by examining the impact of accountant worker classification on audit effectiveness. Our novel evidence on IC workers complements a growing literature on alternative work arrangements for employee workers(Almer, Cohen, and Single 2003; Johnson et al. 2008; Kornberger et al. 2010; Kuselias, Agoglia, and Wang 2023; Nair et al. 2024).

Second, we contribute to the nascent literature examining the impact of rank-and-file auditors on audit effectiveness (Beck et al. 2018; Hoopes et al. 2018; Christensen, Newton, and Wilkins 2021; Chen 2024; Aobdia, Choudhary, and Newberger 2024; Frost, Jing, Shang, and Su 2024; Krishnan, Krishnan, and Maex 2024). We document improvements in audit effectiveness in response to laws that incentivize audit firms to classify accountants as employees not ICs. Relative to extant research, we better isolate the effects of accountants at audit, rather than client, firms on audit effectiveness, a key challenge for this literature (Call, Campbell, Dhaliwal, and Moon 2017; Beck et al. 2018; Lee and Yu 2021; Barrios 2022; Armstrong, Kepler, Larcker, and Shi 2024).

Our findings should interest audit firms, who have increased usage of ICs over time, as well as audit regulators interested in analyzing the impact of changes to audit team composition. The PCAOB, in its 2024 amendments to quality control standards, highlights ICs as posing distinct quality control risks and encourages audit firms to develop unique policies and procedures for ICs. From a public policy perspective, our evidence suggests recent worker classification laws (e.g., AB5 in California) that provide occupational exemptions for CPAs can impede audit effectiveness.

2.   Institutional Setting and Hypothesis Development

2.1   *Institutional Setting*

The Internal Revenue Service (IRS) is responsible for determining whether a worker is an employee or IC for the purpose of federal employment taxes. The IRS uses a "common law test" which determines worker classification based on the degree of control the business exercises over a worker in terms of where, when, and how the work is performed.[6] The IRS considers 20 factors in applying the common law test.[7] However, many states have their own set of deterministic tests.

Several states use an "ABC test" for determining worker classification for unemployment insurance purposes. With this test, in order for a business to argue that a worker is an IC and not an employee, it must establish that (A) such individual has been and will continue to be free from control and direction in connection with the performance of such services; and (B) such service is performed either outside the usual course of the business for which the service is performed or is performed outside of all the places of business of the enterprise for which the service is performed; and (C) such individual is customarily engaged in an independently established trade, occupation, profession or business or the same nature as that involved in the service performed.[8]

In 1990, Massachusetts enacted its Independent Contractor Law ("the MICL"). MICL followed the ABC test, which is typically only contained in unemployment insurance law, and extended its application to wage law. Massachusetts firms, especially non-construction businesses, were largely unaware of the existence of the 1990 MICL and continued to use the standard IRS 20 factor common law test for worker classification purposes until June 2004 (Morse Law 2005).

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[6] An economic realities test, which assesses whether a worker is economically dependent on a business, is another form and applied by the Department of Labor to a number of federal laws, including Fair Labor Standards Act, Age Discrimination in Employment Act, American with Disabilities Act, Family and Medical Leave Act (Eisenbach 2010).
[7] The common-law test used by the IRS has been applied by the courts to a number of federal laws, including the Employment Retirement and Income Security Act and National Labor Relations Act (Eisenbach 2010).
[8] In Table 1, we consider laws in six other states. New Hampshire, Maryland, and Maine adopted all three prongs of the ABC test, Oregon and Utah adopted only the A and C prongs, and Kansas adopted only the A and B prongs.

In June 2004, the MICL was amended as part of a public construction bill to aid construction trade unions and its provisions became effective immediately (Berluti 2009).[9] This amendment expanded the application of the original MICL from unemployment compensation purposes to wage law requirements, including minimum wage and overtime pay. The amendment also increased the monetary penalty for both intentional and unintentional misclassification.[10]

The amendment importantly expanded the applicability of the statute by amending the ABC test in a significant way; it deletes the "*or is performed outside of all places of business of the enterprise for which the service is performed*" phrase from the second ("B") provision of the test. Prior to this revision, a Massachusetts business could classify a worker as an IC as long as the worker remained in a location outside any establishment of the business, even if the worker was performing tasks related to the business's usual course of business. From 2004 onward, any worker in charge of tasks related to a business's day-to-day operations must be classified as an employee, regardless of the worker's location. Thus, any business that hired ICs who worked at home, the client site, or at their own office was impacted. After the passage of the MICL, Massachusetts businesses had to re-examine worker classification to ensure they were free from any legal liability arising from misclassification.[11] Moreover, with the stricter law, workers are able to file lawsuits against their organizations for misclassification, potentially imposing large direct and indirect litigation costs on businesses, including audit firms subject to worker litigation (Chen 2024).[12]

In December 2004, the Massachusetts Attorney General issued an advisory which declared

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[9] The statute that amends the definition of an IC became effective July 19, 2004. The statute that revises enforcement became effective June 10, 2024. We define the posttreatment period as June 2004 onwards (Hwang and Kahle 2024).
[10] The burden of proof is with the business. Violations relating to wages, overtime, withholding taxes, workers' compensation can subject the business to public (civil and criminal penalties) and private (lawsuits) enforcement costs.
[11] Our discussions with a senior labor lawyer confirm that it was common for professional services firms to seek out a legal opinion with respect to the impact of MICL. For example, an architectural firm based out of Cambridge, MA, on advice of counsel, started classifying ICs as employees and started withholding payroll taxes (Appelbaum 2007).
[12] Chen (2024) examines a sample of 138 lawsuits between 2005-2018, where workers at Big 4 audit firms sue the audit firm for labor related issues, including worker classification issues (e.g., not being paid overtime and benefits).

that MICL, as amended, "excludes far more workers from independent contractor status than are disqualified under the IRS common law test". The Attorney General noted that while the 20 factor test considered by the IRS can be adjusted to the circumstances of the work arrangement, Massachusetts law establishes a rigid, three-part ABC test that must be met to overcome the law's presumption of an employment relationship between a business and a worker (Morse Law 2005).[13]

Following the passage of the 2004 MICL, law firms wrote articles informing their clients of the law change, with headlines such as "Serious problems and choices for business in Massachusetts" (Morse Law 2005) as well as "The rigid Massachusetts independent contractor law" (Bartulis Jr. 2019). Law firms noted that the 2004 MICL has, "made it highly unlikely for a worker to be other than an employee" and resulted in "vast increases in independent contractor class action lawsuits" (Berluti 2009). All pointed specifically to accounting firms (and professional service firms more broadly) as being directly impacted.[14] "Affected businesses include accounting firms, law firms, engineering firms, various consulting firms, and many others" (Morse Law 2005).

In January 2008, the Attorney General issued a second advisory, emphasizing the need for even stronger public enforcement of the law. Effective July 2008, businesses became subject to mandatory treble (triple) damages for violation of MICL, which meant that businesses that had inadvertently broken the law would face a strong public enforcement regime (Harbor Law 2018).

Hwang and Khale (2024) examine the impact of MICL on client firms. They document higher operating leverage and lower payouts. They echo the sentiment in the legal practitioner community and suggest audit firms as a natural line of inquiry for worker classification issues.[15]

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[13] The advisory noted "An accounting firm hires an individual to move office furniture. Prong two (of the "ABC" test) is not applicable because the moving of furniture is incidental and not necessary to the accounting firm's business."

[14] Foundational case law in this area involves professionals such as computer programmers working for e-commerce companies (*Kalra* vs. *Viking Networks*), which is analogous to accountants working for audit firms (Berluti 2009).

[15] Operating leverage is negatively associated with audit effectiveness (Ayres et al. 2024), biasing against our prediction of increased audit effectiveness. Repurchases are not associated with audit effectiveness (Caskey and Hanlon 2013). Nonetheless, we include a control for client firm industry-level reliance on ICs within our design.

2.2   Impact of MICL on Accountant Classification

Our maintained assumption is that MICL reduced IC usage and increased employee usage among audit firms in Massachusetts. We validate this assumption using four datasets on employees and ICs, where we compare changes in Massachusetts to other geographically proximate states in the New England region (i.e., Connecticut, Maine, New Hampshire, Rhode Island, Vermont).[16] The comparison to adjacent states allows us benchmark to a similar sized accountant labor market and assess possible worker flows across different states in the same region (Bloomfield et al. 2017).

Our first analysis is based on the Bureau of Labor Statistics' (BLS) Quarterly Census of Employment and Wages (QCEW) program data, which provides detailed industry-level information on employment for all employees at CPA firms (Cascino et al. 2021). We obtain state-year data for all New England states based on the North American Industry Classification (NAICS) code 541211 ("Offices of Certified Public Accountants"). QCEW data are based on unemployment insurance filings that every establishment is required to file for purposes of calculating payroll taxes related to unemployment insurance, which covers 98% of all workers in the United States.[17] We observe a sharp increase of approximately 2,000 employees in CPA firms in MA (from 9,367 in 2004 to 11,604 in 2005) in Figure 1 relative to a modest increase of approximately 100 employees in adjacent states in Figure 2 (from 9,295 in 2004 to 9,361 in 2005). As this dataset includes all employees of CPA firms, and not only auditors with a CPA license, we encourage caution in attributing the entire increase to CPA auditors. Non-CPAs (e.g., audit interns or advisory staff) or CPA tax professionals can also facilitate improved audit outcomes (Sherwood et al. 2020).

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[16] New Hampshire passed a broadly applicable worker classification law in 2008. For completeness, we retain New Hampshire for the purposes of these figures. Removing New Hampshire does not materially impact Figures 2,4, or 6.
[17] Cascino et al. (2021) confirm that the BLS QCEW dataset includes establishments (or local offices) of Big 4 public accounting firms. Sherwood et al. (2020) document that CPAs account for approximately 35% of all workers at Big 4 firms in MA from 2009-2014. We hand collect data on the number of CPAs at the Big 4 audit firm offices in Boston, Massachusetts using Book of Lists data. We are able to obtain pre/post data for two of the Big 4 audit firms, PwC and Deloitte. We find that CPA levels for PwC (Deloitte) increase from 461 (334) in 2002 to 562 (491) in 2006.

Our second analysis is based on the Bureau of Labor Statistics' (BLS) Occupational Employment and Wage Statistics (OEWS) program data, which provides detailed occupation-level information on employment of accountants and auditors (Abramova 2024). We obtain state-year data for all New England states based on Standard Occupation Classification (SOC) code 12-2011 ("Accountants and Auditors"). OEWS data are based on a survey of 1.2 million establishments over a three-year period, which covers 62% of non-farm workers in the United States (Le 2024).[18] We observe a sharp increase of approximately 5,000 accountants and auditors in MA (from 26,150 in 2004 to 31,150 in 2007) in Figure 3 relative to a modest decrease of approximately 100 accountants and auditors in adjacent states in Figure 4 (from 32,280 in 2004 to 32,190 in 2007). As this dataset includes both accountants and auditors working in a broad range of sectors, and not only auditors working at CPA firms, we encourage caution in attributing the entire increase to CPA auditors. While the composition of IC vs. employee accountants at client firms is not expected to change after MICL, we conduct several tests in Section 4 to assess potential confounds.

Our third analysis combines the first (industry-level) and second (occupation-level) analyses in approximate terms. It is based on Integrated Public Use Microdata Series (IPUMS) – Current Population Survey (CPS). CPS is a monthly U.S. survey of 60,000 households conducted jointly by the U.S. Census Bureau and the Bureau of Labor Statistics. We obtain state-year data (i.e., annual averages of the 12 monthly observations for each state) for all New England states based on members of the "accountants and auditors" occupation (code 023) who are also within the "accounting, auditing, and bookkeeping services" industry (code 890), which we term public accountants (Madsen 2013). We observe an increase of approximately 1,000 public accountants in MA (from 3,444 in 2000-2004 to 4,455 in 2005-2009) relative to a more modest increase of

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[18] We compare 2004 to 2007 as annual snapshots are formed using the last three years to account for sampling structure of the survey (i.e, 400,000 establishments surveyed each year over a three-year period) (Hershbein and Kahn 2018).

approximately 150 public accountants in adjacent states (from 2,293 in 2000-2004 to 2,454 in 2005-2009). We take five-year averages for this survey because its survey design leads to higher volatility than those used in the first two analyses (i.e., CPS estimates are based on a much smaller sample of the population than other surveys). While the national sample consists of approximately 60,000 households, state sub-samples range widely from approximately 500 to 4,600 households. As this dataset includes all public accountants working at CPA firms, which includes some non-auditors (e.g., tax professionals), we encourage caution in attributing the entire increase to auditors.

Our fourth analysis is based on the Census Bureau's Nonemployer Statistics (NES) program data, which draws on business tax records shared by the Internal Revenue Service (IRS) and provides detailed industry-level information on payments for work performed by CPA firms that likely represent ICs. We obtain state-year data for all New England states based on the North American Industry Classification (NAICS) code 541211 ("Offices of Certified Public Accountants"). NES data counts the number of business establishments that have no paid employees, are subject to federal income tax, and have greater than $1,000 in gross receipts annually, all characteristics associated with ICs. We observe a sharp decrease of approximately 100 CPA ICs in MA (from 953 in 2004 to 868 in 2006) in Figure 5 relative to a modest decrease of approximately 10 CPA ICs in adjacent states in Figure 6 (from 1,061 in 2004 to 1,052 in 2006). We encourage caution with this dataset as it captures only one specific form of CPAs working as ICs rather than all forms of CPAs working as ICs. Abraham et al. (2023) note several limitations of this dataset, including that self-employment income is known to be significantly underreported in tax data. NES data therefore likely reflects a lower bound for ICs as it relies on self-reporting of income as part of the federal tax filing and represents only one form of CPAs working as ICs.[19]

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[19] If we use the broader NAICS code for CPA ICs (5412, "Accounting, tax preparation, bookkeeping, and payroll services"), we observe a larger decrease of approximately 400 CPA ICs in MA (from 9,542 in 2004 to 9,150 in 2006).

Collectively, the evidence from four separate analyses, two focused on industry-level worker data, one focused on occupation-level worker data, and one leveraging both industry-level and occupation-level worker data is consistent with reduced IC usage and increased employee usage among audit firms in Massachusetts in and around 2004. We do not find any evidence of similar trends (e.g., due to SOX) for geographically adjacent states, nor do we find evidence of worker flows from adjacent states in New England accounting for the change in Massachusetts.[20] We therefore attribute the change to MICL, although we caution that the analysis is descriptive in nature and is likely to suffer from measurement error arising from inherent dataset limitations.

2.3   *Hypothesis Development*

The traditional perspective of auditing is as an economic good akin to manufacturing (Simunic 1980; O'Keefe, Simunic, and Stein 1994). Under this view, workers are homogenous and substitutable inputs into the production process where audit firms use standard audit methodologies, have uniform requirements for engagement teams, and use consistent training to ensure homogeneous audit outcomes (Hoopes et al. 2018). More recent research challenges this view, finding that resource allocation decisions in audit engagements are shaped by client and engagement characteristics (Hackenbrack and Knechel 1997). Knechel, Thomas, and Driskill (2020) propose a novel perspective on auditing, characterizing it as an economic service whereby the client and audit firm jointly participate in the production of the audit. This professional services perspective characterizes auditing as a co-production service influenced by audit and client firms.

ICs offer both benefits and costs to businesses in co-production service settings (Kesavan et al. 2014). ICs offer operational flexibility, upside flexibility in particular, such that businesses

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[20] Other possibilities include audit firms circumventing MICL by leveraging their regional and national network of workers outside of Massachusetts (Beck et al. 2018), offshoring work to India (Sherwood 2024) or nearshoring work to Canada and/or Mexico (Shamis et al. 2005). The evidence in Section 2.2 is inconsistent with these alternatives, which reflect more long-term responses. In the short run, the labor supply of accountants is constrained and inelastic.

can increase service capacity beyond normal capacity and better match the supply of labor to the demand. This is important for audit firms where the need to supplement the workforce "as needed" is critical (Rowley 2021). ICs also offer temporal flexibility by providing businesses with a greater ability to adjust staffing to match demand within a particularly busy month or quarter. The need for temporal flexibility arises in audits as unexpected spikes in workload are not uncommon (Ayres et al. 2024). Another benefit that ICs offer is that they typically cost less (on an aggregate basis, not necessarily on a per hour worked basis) than employees as they do not need to be compensated year-around, are not entitled to employee benefits or training, and businesses do not need to contribute unemployment, worker compensation, or health insurance premiums for these workers.

However, ICs are not without costs, including lower goal alignment. The organizational behavior literature finds that use of ICs can have negative performance effects, particularly for tasks requiring high-skilled workers (Lu and Lu 2017). A "distance" develops between ICs and the organization whereby ICs feel isolated and alienated from the firm and this limits ICs' engagement in achieving organizational goals (Davis-Blake, Broschak, and George 2003; Broschak and Davis-Blake 2006). This is especially the case for team-based work such as auditing. For example, with respect to non-regular workers, Buchheit, Dalton, Harp, and Hollingsworth (2016) report on an interview with a Big 4 Senior Accountant that notes, "Unless everyone on the team supports the initiative, the work arrangement will not work effectively. If one person does not support the initiative (especially if it's an upper-level person), it does not set a tone conducive for the arrangement." The short-term nature of ICs work also renders it more challenging for audit firms to use incentives (i.e., salary, bonuses, performance evaluations, promotions) or the threat of termination to foster goal alignment (Hoopes et al. 2018; Nair et al. 2024; PCAOB 2024).[21]

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[21]In a comment letter in response to the PCAOB's 2024 proposed amendments to quality control standards, the Center for Audit Quality noted, "firms cannot provide performance feedback to non-employee contractors and consultants."

A key driver of performance effects arising from IC usage is ability. On the one hand, most workers prefer continuous employment as employees, suggesting that ICs are, on average, those with a lower ability (Nair et al. 2024). Consistent with this viewpoint, audit partners and managers perceive the work of non-regular workers as inferior (Johnson et al. 2008) and academics note that non-regular workers at audit firms may be less qualified (Khavis et al. 2022). On the other hand, relative to other types of workers examined in the literature, such as nurses (Lu and Lu 2017), retail workers (Kesavan et al. 2014), and teachers (Nair et al. 2024), ICs in audit firms benefit more from compensatory arrangements of foregoing continuous employment as employees (i.e., working only part of the year, having some choice of location and clients, etc.) and thus could in fact attract higher ability workers for which career breaks, work-life balance, or varied experiences are important (MassCPA 2019). These two viewpoints are not mutually exclusive, as some ICs at audit firms may be of lower ability for which being an IC is not a choice (e.g., early career professionals looking to gain experience) while others may be of higher ability for which being an IC is a choice (e.g., mid-career professionals with children, older professionals near retirement).[22] We do not take a position on whether ICs in audit firms are, on average, of lower or higher ability. Instead, we assume the ability of ICs around MICL stays constant while goal alignment changes.[23]

In sum, the impact of the 2004 MICL adoption on audit effectiveness is theoretically ambiguous, reinforcing the importance of empirical tests of its consequences. To the extent that audit firms had optimized their mix of employees and ICs prior to the law change, MICL altering this mix may result in audit firms reaping fewer benefits from ICs post MICL adoption, in terms

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[22] Our focus is on ICs working as auditors on the audit team (PCAOB 2003, 2024; SEC 2004). While specialists (e.g., valuation experts) can also operate as ICs working on the audit team, that is not our focus. Relative to auditors, MICL will arguably have a lower impact on ICs working as specialists given the law's emphasis on "usual course of business"

[23] MA enacted the 150-hour rule in 2002, after which there was an immediate decline in CPA exam test-takers (Barrios 2022). Nationally, Duguay et al. (2020) note that the CPA labor supply was constrained and inelastic around 2004. Our conversations with MA audit partners suggest that 2004 reflected a historically tight labor market for accountants. Thus, our results are likely driven more by reclassification of existing ICs to employees than hiring of new employees.

of operational (i.e., upside and temporal) flexibility and cost savings.[24] This would predict that MICL would negatively impact audit effectiveness. Conversely, to the extent that audit firms faced constraints, such as the labor market reflecting labor demand and supply imbalances for employees, that prevented them from reaching an optimal IC and employee mix, audit firms being required to classify ICs as employees may increase the goal alignment of their workforce. Efficiency wage theory implies that higher compensation, in the form of greater access to employee benefits, training, and labor protections post-MICL adoption, will result in improved audit personnel performance (Hoopes et al. 2018; Blann et al. 2024).[25,26] This suggests that MICL could positively impacts audit effectiveness. These arguments lead to our primary hypothesis:

H1: A change in accountant classification from ICs to employees at audit firms

arising from a legal intervention leads to improved audit effectiveness.

3.   Sample Selection and Research Design

3.1   Sample Selection

Table 2 presents our sample selection procedure. Our sample period is from 2000 to 2008, four years before and after the adoption of MICL in 2004. Massachusetts enacted the 150-hour rule, which increases the education requirements for a CPA license, in 2002. However, this rule decreased the number of entrants into the profession (Barrios 2022) and had no impact on audit effectiveness (Allen and Woodland 2010), limiting its ability to confound our inferences. We end

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[24] From the perspective of workers, costs of MICL include higher taxes and less flexibility (Burger and Gould 2005).
[25] This prediction is consistent with reciprocity arguments whereby workers respond to the "gift" of employee benefits, training, and labor protections with a reciprocal "gift" of greater effort (Akerlof 1982). Under this "gift exchange", the worker attributes the gift to the organization, which is plausible even for mandated laws (Edmans et al. 2024). Our discussions with a labor lawyer suggest that firms made one of two choices with respect to MICL - (1) compliance with the law to avoid enforcement costs or (2) non-compliance with the law and acceptance of costs of enforcement.
[26] Friedrich et al. (2024) note training and legal protections can have separate and additive effects on audit outcomes. Employment protection incentivizes workers to make more firm-specific investments (e.g., encouraging workers to more actively engage in company provided training), thereby facilitating improved audit effectiveness. The PCAOB notes that training as well as coaching and support to teams are critical drivers of audit effectiveness (PCAOB 2015).

the sample period in 2008 to avoid the confounding effects of a) heightened regulatory scrutiny associated with PCAOB office expansion, including in Boston, Massachusetts, beginning in 2009 (Blann, Kleppe, and Shipman 2023) and b) enactment of CPA mobility provisions, which allow CPAs from other states to move freely into Massachusetts, in 2011 (Cascino et al. 2020).

We use accounting data from Compustat, market data from the Center for Research in Security Prices (CRSP), and audit data from Audit Analytics. We start with U.S. public firms that are covered in Compustat and CRSP. Firms from financial industries (SIC codes 6000-6999) are excluded from the sample. We set the following variables to zero if they are missing in Compustat: R&D expense, tax loss carryforwards, intangible assets, and extraordinary items (Gallemore and Labro 2015). Firm-year observations with missing data for each control variable (and lagged control variable) are dropped from the sample. We drop observations for which we cannot obtain historical headquarter addresses using the "Augmented 10-X Header Data" provided by the Software Repository for Accounting and Finance and/or headquarter data from Jennings, Lee, and Matsumoto (2017). We drop observations from Oregon and New Hampshire as these states pass broadly applicable worker classification laws during our sample period (see Table 1) and may contaminate our control sample. We reach a final sample of 18,489 firm-year observations.

3.2   *Research Design*

We follow Hwang and Kahle (2024) and use MICL to capture changes in worker classification. We use a DID research design to compare client firms for which their audit firm's local office is located in Massachusetts ("treated" firms) vs. client firms for which their audit firms' local office is located outside of Massachusetts ("control" firms) around the 2004 law adoption:

$$Audit\ Outcomes_{it} = b_1 Treat \times Post + \gamma' X_{it} + \partial_a + \delta_{jt} + \varepsilon_{it}, \quad (1),$$ where i denotes client firm, t denotes year, a denotes local audit firm office, and j denotes client firm industry. *Audit*

Outcomes capture audit effectiveness. *Annual Restatements* is an indicator variable equal to one if the client firm restated the current fiscal year 10-K, and zero otherwise. DeFond and Zhang (2014), Aobdia (2019), and Rajgopal et al. (2021) note that restatements of annual financial reports represent a powerful empirical proxy for audit effectiveness in that they provide evidence of an ex-post audit failure. *Treat* is an indicator variable equal to one if a client firm uses an audit firm whose local audit office is located in Massachusetts, and zero otherwise. *Post* is an indicator variable equal to one if a client firm's fiscal year end is in or after June 2004, and zero otherwise. The variable of interest is the interaction between *Treat* and *Post*, which compares audit effectiveness between treated versus control client firms before and after MICL.[27]

We include a list of control variables that prior research has documented to be associated with audit outcomes (Lawrence, Minutti-Meza, and Zhang 2011; Blann et al. 2024). First, we include audit firm characteristics that can influence audit outcomes, i.e., audit firm industry expertise (*AuditFirm Ind Exp)*, client importance (*Client Importance*), the timing of preparing the audit report (*Busy*), audit firm size (*BigN Auditor*), auditor change (*Auditor Change*), as well as both audit and non-audit fees (Schwartz and Soo 1996; Francis, Michas, and Yu 2014).[28]

Second, client firm characteristics are included as controls, i.e., firm age (*Age*), size (*Size*), property, plant, and equipment (*PPE*), extraordinary items (*Extra Item*), *Operating Segments, Leverage*, *Intangible*, *Foreign Income*, *Accounting Complexity*, return on assets (*ROA*), market-to-book ratio (*MTB*), geographic dispersion (*Geo Dispersion*). For example, foreign income, more geographical dispersion, greater complexity in the accounting environment, greater operating segments, and other firm fundamentals that affect the amount of audit work performed after year-

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[27] Audit firms were aware of MICL in 2005 with the Massachusetts Society of CPAs noting, "Accounting firms are doubly affected. Many accounting firms hire people off-site. They could be considered employees. Meantime, they don't know how to advise clients who think they're using contracted help that may be employees" (Mason 2005).
[28] The *BigN Auditor* variable controls for the impact of PCAOB inspections starting in 2005 (Gunny and Zhang 2013).

end could affect audit outcomes (Ashton, Graul, and Newton 1989; and Knechel and Payne 2001). We also include measures of uncertainty regarding the firm's fundamentals, i.e., stock return beta (*Beta*) and M&A activity (*Merger)* that could affect audit effectiveness (Ayres et al. 2024).

We control for the client firm's large and accelerated filer status (*Lg Accelerated Filer and Accelerated Filer*) to account for concurrent regulatory changes resulting from SOX 404. We control for the client firm's reliance on ICs (*Client Heavy IC*) to account for concurrent effects of MICL on client firms (Hwang and Kahle 2024). Lastly, we include local audit firm office and client firm industry-by-fiscal year fixed effects to control for time-invariant local audit office characteristics and time-varying client firm industry characteristics.[29]Appendix B presents all variable definitions. Standard errors adjust for heteroscedasticity and are clustered at the audit firm office state level to correct for serial correlation within a state (Bertrand, Duflo, and Mullaninathan 2004). All continuous variables in our models are winsorized at the 1st and 99th percentile.

4.   Results

4.1   Descriptive Statistics

Table 3 reports the full sample descriptive statistics. The *Annual Restatement* variable has a mean of 0.085, while the *Quarterly Restatement* variable has a mean of 0.015, suggesting that approximately 10% of firm-year observations have a 10-Q and/or 10-K restatement, consistent with evidence in Cao, Myers, and Omer (2012). The *Disc Accrual* variable has a mean of -0.03 and a median of -0.02, consistent with evidence in Hribar and Nichols (2007). 6.4% of the firm-year observations in the sample belong to the treated group in Massachusetts, consistent with evidence in Beck et al. (2018) and Hoopes et al. (2018). The observations after the law's adoption

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[29] We use OLS (i.e., a linear probability model) because it allows for a direct interpretation of average treatment effects and nonlinear models face potential complications when using granular fixed effects (e.g., the incidental parameters problem). In untabulated analysis, we also estimate our analyses using logistic regressions and find similar results.

in June 2004 represent 59% of the sample, consistent with evidence in Hwang and Kahle (2024).

4.2   Main Analyses

Our hypothesis predicts that because ICs have lower goal alignment with audit firms than employees, the adoption of MICL in 2004, which discourages (encourages) accountant IC (employee) usage among audit firms, will result in enhanced audit effectiveness. In Table 4, we examine how the two restatement variables (i.e., *Annual Restatement* and *Quarterly Restatement*) change in response to MICL. In column (1), we examine annual financial restatements. We document that MICL leads to a statistically significant (at the 1% level) and negative estimated coefficient on *Treat*Post*. After MICL, local audit firms' clients have, on average, a 2.1% lower likelihood of an annual restatement. This economic magnitude is comparable to magnitudes of approximately 3% reported in prior studies that examine annual restatements over our sample period (Cao et al. 2012; Dai et al. 2024). The evidence suggests that by discouraging (encouraging) IC (employee) accountant usage among audit firms, MICL improves audit effectiveness.

Annual financial reports reflect a joint production process between audit and client firms (Knechel et al. 2020). Conversely, quarterly financial reports are reviewed, not audited, by audit firms and largely reflect the work of client firms and corporate accountants (Srinivasan 2005; Lobo and Zhao 2013; Hennes, Leone, and Miller 2014; Aobdia, Liu, Na, and Wu 2024). Audit firms and public accountants play a more limited role with respect to quarterly financial reports. A review typically involves inquiry of clients' employees and analytical procedures, and no substantive testing is performed by the audit firm. We expect that the shift from ICs to employee accountants at audit firms induced by MICL will have little impact on quarterly restatements. In column (2) of Table 4, we conduct a falsification test using quarter-only restatements per Lobo and Zhao (2013) (i.e., the client firm restated its 10-Q but not its corresponding 10-K). As expected, the estimated

coefficient on *Treat*Post* is negative but statistically insignificant at conventional levels.[30]

Control variables behave in line with expectations, with the importance of the client firm to the audit firm (*Client Importance*), audit firm size (*BigN Auditor),* audit firm change (*Auditor Change)*, non-audit fees (*NAF*), audit fees (*AF*), client firm age (*AGE*), client firm size (*SIZE*), client firm market-to-book ratio (*MTB*), client firm accounting complexity (*Accounting Complexity*), client firm foreign income (*Foreign Income*), client firm intangible assets (*Intangible*), and client firm geographical dispersion *(Geo Dispersion*) having statistically significant (at least the 10% level or better) estimated coefficients in columns (1) and/or (2).

4.3 Cross-Sectional Analyses

We document that the shift from ICs to employees induced by MICL leads to improved audit effectiveness, suggesting that the costs of ICs (e.g., lower goal alignment) exceed the benefits (e.g., higher operational flexibility), at least on average and for our specific setting. However, there is likely to be considerable cross-sectional variation in the IC usage cost-benefit calculus across audits. A key benefit of IC usage is operational flexibility, and prior research highlights factors that drive predictable variation in the need for operational flexibility. First, operational flexibility is especially important when organizations face demand uncertainty (Nair et al. 2024), which in the audit context occurs when client firms actively engage in M&A activity, rendering it difficult to predict how best to resource the audit (Ayres et al. 2024). Thus, we expect that MICL will improve audit effectiveness more for non-M&A active clients, for which operational flexibility provided by ICs is less important. In column (1) of Table 5, results show that the shift from ICs to employees induced by MICL leads to statistically significant (at the 1% level) estimated coefficient

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[30] Quarterly restatements may be corrected prior to the annual audit and may mechanically reduce the likelihood of annual restatements. To control for this effect, we exclude quarterly restatements announced prior to the year-end for which the mechanical association between quarterly and annual restatements is more likely and find similar inferences.

on *Treat*Post*M&A Active* =0 in the predicted direction. Second, Big 4 audit firms and larger local audit offices can use their greater resource base to adjust to demand uncertainty, thereby diminishing the need for operational flexibility provided by ICs for adjustment purposes (Ayres et al. 2024). Thus, we expect that MICL will improve audit effectiveness more for Big 4 audit firms and larger local audit offices. In column (2) of Table 5, results show that the shift from ICs to employees induced by MICL leads to statistically significant (at the 1% level) estimated coefficient on *Treat*Post*BigN Auditor*=1 in the predicted direction. In column (3) of Table 5, results show that the shift from ICs to employees induced by MICL leads to statistically significant (at the 5% level) estimated coefficient on *Treat*Post*Large Audit Office*=1 in the predicted direction.

4.4   Other Broadly Applicable Worker Classification Laws

Our main analysis focuses on the 2004 Massachusetts law adoption as it is considered more binding by legal scholars than similar law adoptions in other states (Keohane and Schap 2021). While we use a DID research design, which in theory should control for the impact of confounding events (i.e., collapse of Arthur Anderson, SOX, the inception of the PCAOB and inspections), we acknowledge that the 2000-2008 time period was particularly active in terms of regulatory changes

To further address concerns regarding the potential impact of confounding events, we use a stacked DID design to examine whether we find similar results if using state-level law adoptions in six additional states from 2006 to 2013 – Kansas, Maine, Maryland, New Hampshire, Oregon, and Utah (see Table 1 for adoption dates). While weaker than the Massachusetts law, the Oregon law is similar in that it also applies the ABC test and applies to all firms in the state. The remaining states' laws also apply to all firms in the state but the legal changes are not always related to the ABC test. Instead, these law changes, referred to as definitional statutes, alter the statutory definitions of independent contracting and/or employment relationships (Hwang and Khale 2024).

Thus, while affording us more cross-sectional and time-series variation to exploit than MICL, the smaller effect sizes associated with these other law changes may weaken the power of our tests.[31]

With staggered treatment timing and heterogeneous treatment effects, two-way fixed effects (TWFE) estimation can introduce a "forbidden comparisons" problem by comparing later treated firms to earlier treated firms as a control, yielding biased estimates of treatment effects. This occurs as the estimator is a weighted average of each possible two-by-two DID comparison combination, some of which use earlier treated firms as controls for later treated firms. If later adopting states learn from earlier adopting states and produce more effective laws, staggered treatment timing will bias the estimator towards zero as the design pools earlier and later adopting states. If the impact of laws grows over time, heterogenous treatment effects will bias the estimator towards zero as the design will use some earlier treated firms as controls for later treated firms.

In Table 6, we address the econometric concern associated with staggered DIDs by using a stacked DID research design (Baker et al. 2022). In column (1), the estimated coefficient on *Treat*Post* is negative and statistically significant (at the 5% level). In column (2), the estimated coefficient on *Treat*Post* is positive but statistically insignificant at conventional levels.

4.5 *Falsification Analyses*

Since MICL applies to workers providing services that are within the company's *usual course of business*, we expect it to apply to external auditors who work for audit firms but not to corporate accountants or internal auditors who work for client firms for which the usual line of business is not accounting (e.g., biotech firm). We nonetheless conduct three falsification tests in Table 7 to assess whether changes in client firm accountant classification confound our inferences.

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[31] Hwang and Kahle (2024) similarly justify their main emphasis on the Massachusetts law by providing evidence that MICL is more binding and also legally stronger in its public enforcement than similar law adoptions in other states.

We first examine the impact of MICL on firms' internal information environment (IIE) (i.e., EPS forecast accuracy). We should observe improvements in this outcome variable if there is a confounding effect of changes in accountant classification among client firms. Under this alternative explanation, outcomes such as IIE that can be influenced by client firm accountants but not audit firm accountants should also be impacted by MICL. In Table 7, Panel A the estimated coefficient on *Treat*Post* is negative but statistically insignificant at conventional levels.

Next, we examine the same outcome variable as our main analysis (i.e., annual financial restatements) but for a sample of client firms headquartered in Massachusetts where the local audit office is outside of Massachusetts (e.g., Hartford, Connecticut). We should observe improvements in audit effectiveness if our results are driven by changes to client firm accountant classification rather than audit firm accountant classification (Guo et al. 2016). In Table 7, Panel B the estimated coefficient on *Treat*Post* is positive but statistically insignificant at conventional levels.[32]

Third, we use a stacked DID research design and examine the impact of laws restricting IC usage in nine states but only for construction-sector firms (see Table 1). We should observe improvements in audit effectiveness if our results are driven by changes to client firm accountant classification rather than to audit firm accountant classification. In Table 7, Panel B the estimated coefficient on *Treat*Post* is positive but statistically insignificant at conventional levels.[33]

4.6   California AB5 Analyses

California's AB5 law went into effect on January 1, 2020. As with MICL, AB5 applies the ABC test to worker classification and makes it more challenging for firms to classify workers as ICs. Unlike MICL, AB5 allows for occupational exemptions, including accountants holding an

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[32] Case law suggests that MICL does not apply where workers spend some time in Massachusetts but the organization, they work for is headquartered outside of Massachusetts and the time spent in Massachusetts is less than half the year.
[33] In these tests, we restrict the treated firms to client firms headquartered in these nine states and in the construction sector (i.e., two-digit NAICS code of 23). We find similar results if we do not impose this sector requirement.

active CPA license from the state of California. The occupational exemption does not extend to non-CPAs working at audit firms nor does it extend to out-of-state CPAs. In our main analysis, we are unable to disentangle the effects of CPAs from non-CPAs on audit effectiveness and Figure 1 suggests both could be impacted by MICL. With the AB5 analysis, any improved audit outcomes we observe can more clearly be attributed to non-CPAs working at audit firms (e.g., bookkeepers, audit interns, advisory personnel) or out-of-state CPAs.[34] As audit effectiveness is driven more by CPAs than non-CPAs, we expect weaker effects for AB5 relative to MICL. In Table 8 we restrict our sample period to 2017-2022 and exclude all states with pre-existing worker classification laws (see Table 1). In columns (1) and (2) of Table 8, the estimated coefficients are statistically insignificant at conventional levels. This evidence suggests that worker classification laws, such as AB5 exempting in-state CPAs working at audit firms, do not improve audit effectiveness.

4.7   *Dynamic Analysis*

The validity of a DID estimation depends on the parallel trends assumption: absent the 2004 MICL, treated firms' audit outcomes would have evolved in the same way as that of control firms. This assumption is untestable because we do not observe the treated firms in the absence of treatment. However, we can obtain suggestive evidence by examining pre-treatment trends. In column (1) of Table 9, we employ an event-time specification where the key variables of interest for pre-trends are *Treat*Year [2000,2001, 2003]* with 2002 serving as the benchmark year. The estimated coefficients are not statistically significant, suggesting that there is no significant difference in audit effectiveness between treated versus control firms prior to MICL. MICL went into effect June 2004 and the Attorney General issued its first advisory in December 2004. The

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[34] The California Society of CPAs noted the impact of AB5 on worker classification at CPA firms, "The law is having an immediate impact. My members use armies of temporary paraprofessionals. Thousands — it could be tens of thousands — are now being put on payroll, signed up for withholdings and offered benefits." (Roosevelt 2020). From 2019 to 2022 in CA, we observe a 5% increase in employees in CPA firms and an 8% decrease in ICs in CPA firms.

estimated coefficient on *Treat*2005* is statistically significant (at the 10% level). The Attorney General issued it second advisory in January 2008. The estimated coefficient on *Treat*2008* is of similar economic magnitude as *Treat*2005* but statistically insignificant at conventional levels. In column (2), we extend our sample period to the end of 2010 to assess whether, like the 2004 advisory, the 2008 advisory had a delayed effect. In line with expectations, the estimated coefficients on *Treat*2008* and *Treat*2009^{+}* are statistically significant (at the 10% level). These post-treatment trends are consistent with the effects of coupling a major law change with vigorous enforcement of that law, resulting in a powerful setting to observe effects (Christensen et al. 2013).

4.8 Alternative Measures of Audit Effectiveness

We use discretionary accruals as an alternative (continuous) measure of audit effectiveness. Following Kothari, Leone, and Wasley (2005), *Discretionary Accruals* is signed industry-matched performance-adjusted discretionary accruals. Chen et al. (2018) highlights econometric issues with using residuals as dependent variables. We estimate our model in a single-stage regression where the dependent variable is signed discretionary accruals, and the independent variables include the first stage regressors as well as the first stage regressors interacted with fixed effects. In Table 10, Panel A we replace annual financial restatements with signed discretionary accruals. The estimated coefficient on *Treat*Post* is negative and statistically significant (at the 10% level).

We also use a client's propensity to meet or beat earnings thresholds as an alternative measure of audit effectiveness, Specifically, *Small Profit* represents client firm-year observations where the client has income before continuing operations greater than zero but less than 2% of total assets, and zero otherwise (Francis and Yu 2009). In Table 10, Panel B we replace annual financial restatements with the propensity for the client to meet or bear the zero earnings threshold. The estimated coefficient on *Treat*Post* is negative and statistically significant (at the 5% level).

4.9 Entropy Balancing

We also address concerns that results may be driven by differences in firm fundamentals between treated and control firms. We follow an entropy-balancing approach like Hwang and Kahle (2024). This method calculates and assigns weights to each observation in the control group such that the mean and variance of covariates match between treated and control firms. Regarding covariates, we match on the firm-level controls used in the baseline regression. We require that the entropy balancing approach compute weights for the observations in the control group in a way that the sample mean and variance of each firm-level control match those in the treated group. With the reweighted sample, we re-estimate Equation (1) and examine variation in audit effectiveness for treated, relative to control, firms after MICL adoption. In Table 10, Panel C the estimated coefficient on *Treat*Post* is negative and statistically significant (at the 5% level).

4.10 Accountant Job Satisfaction

Our prediction is that access to benefits, training, and labor protections can result in higher goal alignment between workers and audit firms and thereby improve audit effectiveness. Hoopes et al. (2018) document a negative association between audit office-level employee salary and annual restatements. Christensen, Davila, and Lin (2024) document a negative association between annual training hours per auditor and annual statements. Blann et al. (2024) document that opening of a centralized training facility leads to lower annual restatements. The authors use Glassdoor data to provide evidence of employee job satisfaction being a possible mechanism for the increase in audit effectiveness. Khavis and Krishnan (2021) focus on salary and benefits and find that while these components increase job satisfaction, they have no association with annual restatements.

Glassdoor data is not available until 2008, precluding its use over our sample period. We use the National Survey of College Graduates (NSCG). This survey contains worker job

satisfaction (with salary, benefits and job security) measures. While it does not contain a measure of job satisfaction with training, it does contain data on whether a worker received training during the year. We analyze this survey for members of the "accountants, auditors, and other financial specialists" occupation (code 721510). The main drawbacks of the survey are a) it was conducted in 2003 but not again until 2010, b) for confidentiality reasons, the survey reports the region, but not, state of workers' residence. The lack of state data is mitigated to some extent by our descriptive evidence suggesting minimal changes to the accountant labor market in New England states other than Massachusetts. To tighten our empirical strategy, we benchmark accountants in the New England region to those in the Pacific region, given their similarities (Daines et al. 2021)

Our first three measures capture worker job satisfaction with benefits, job security, and salary, with the survey asking, "Thinking about your principal job held during the [survey reference week], please rate your satisfaction with that job's ….." i) benefits, ii) job security and iii) salary". The possible responses for these questions are: 1 ("very dissatisfied"), 2 ("somewhat dissatisfied"), 3 ("somewhat satisfied"), and 4 ("very satisfied"). Our fourth measure captures the likelihood of attendance at job-related training, with the survey asking, "During the past 12 months, did you attend any work-related training?" Following Madsen and Piao (2021), we include demographic and job-related controls and use sampling probability weights to account for non-random sampling. In column (1) of Table 11, the estimated coefficient on *Treat*Post* is positive and insignificant, suggesting no change in worker satisfaction with job benefits. In column (2) of Table 11, the estimated coefficient on *Treat*Post* is positive and statistically significant (at the 5% level), suggesting greater worker satisfaction with job security. In column (3) of Table 11, the estimated coefficient on *Treat*Post* is positive and statistically significant (at the 10% level), suggesting greater worker satisfaction with job salary. In column (4) of Table 11, the estimated

coefficient on *Treat*Post* is positive and insignificant, suggesting no change in training likelihood.

NSCG has limited time-series variation (i.e., it was only conducted in 2003 and 2010, and the latter is after our sample period). Therefore, we also use the General Social Survey (GSS), which over our sample period, was conducted every two years (i.e., 2000, 2002, 2004, 2006, 2008). While GSS has a lower sample size and lacks granular job satisfaction measures (i.e., with benefits, salary, job security, etc.), the survey does ask about overall job satisfaction. "All in all, how satisfied are you with your job?". As with NSCG, GSS reports region, but not, state of residence. We again follow the research design choices of Madsen and Piao (2021), including in identifying our sample of "accountants and auditors" (code 800), defining our job satisfaction measure, and control variables. In untabulated analysis, the estimated coefficient on *Treat*Post* is positive and statistically significant (at the 10% level), suggesting greater overall worker job satisfaction.

We caution that this evidence is suggestive in nature, as we cannot attribute the increase to accountants specifically working at audit firms in Massachusetts around the 2004 MICL adoption.

4.11   Alternative Benchmark States

In our baseline model, we define benchmark states as all states that do not pass broadly applicable worker classification laws during our sample period of 2000-2008 (i.e., Oregon and New Hampshire). For a variety of reasons, we use other benchmark states in some analyses (i.e., other New England region states in Figures 1-6, Pacific region states in Table 11). In Table 12, Panel A we alternatively define benchmark states as those in the New England and Pacific regions. In column (1), the estimated coefficient on *Treat*Post* is negative and statistically significant (at the 1% level). In column (2), the estimated coefficient on *Treat*Post* is negative but statistically insignificant at conventional levels. In Table 12, Panel B we alternatively define benchmark states as only the state of California (Daines et al. 2021). In column (1), the estimated coefficient on

*Treat*Post* is negative and statistically significant (at the 1% level). In column (2), the estimated coefficient on *Treat*Post* is positive but statistically insignificant at conventional levels. Figures 7 & 8 reproduce Figures 1 & 5 for California and show much smaller changes in the accounting labor market around 2004. In California (Massachusetts), we observe a 4% (20%) increase in CPA firm employees from 2004 to 2005 and a 1% (10%) decrease in CPA firm ICs from 2004 to 2006.

5.   Conclusion

We employ a difference-in-differences research design around a 2004 Massachusetts law change (MICL) that discourages (encourages) use of IC (employee) accountants at audit firms. We validate that the law impacts the accountant labor market in Massachusetts by documenting a large increase in employee accountants at CPA firms. We observe a lower likelihood of restatements of annual financial reports – an indicator of audit effectiveness – after the law change. We observe stronger effects for audits of non-M&A active client firms, Big 4 audit firms, and larger local audit offices, all settings where the operational flexibility benefits of IC usage are lower and therefore less important. We find similar effects when we include law changes in six other states between 2006 and 2013. We find that California's 2020 AB5 law, which is similar to MICL but provides an occupational exemption for in-state CPAs, has no impact on audit effectiveness. Quarterly financial reports involve less audit firm involvement and are more attributable to client firms. We conduct a falsification test using quarter-only restatements and find no decrease after MICL.

The Massachusetts law change is applicable to workers providing services that are within the company's usual course of business. As such, an external auditor working for an audit firm would fall under the purview of the law, while a corporate accountant or an internal auditor working for a biotech client firm would not. Nonetheless, to mitigate the potential confounding effect of changes in accountant usage among client firms, we conduct a falsification test using an

empirical proxy for internal information environment quality and find no effects of the law change.

As another falsification test, we exploit the fact that a subset of client firms headquartered in Massachusetts are audited by local audit offices (e.g., Hartford, CT) outside of Massachusetts. In this sample, the client firm is potentially impacted by the law change, while the audit firm office is not. We find no changes in audit effectiveness for this placebo treatment sample. Some worker classification laws narrowly target construction-sector firms rather than a broad cross-section of firms such as in Massachusetts. These laws may thus impact worker classification among client firms but not audit firms. We conduct one final falsification test using nine states that adopt laws focused on construction-sector client firms and observe no change in audit effectiveness.

The totality of our evidence is consistent with worker classification laws affecting audit effectiveness through changes in audit firm, not client firm, usage of accountant employees. Our findings contribute to an interdisciplinary literature examining costs and benefits of IC usage. Our findings also contribute to the literature on the impact of rank-and-file auditors on audit outcomes.

Our study has public policy implications as worker classification laws have been in the limelight in recent years. California's AB5 law mirrors MICL's presumption of employee status but exempts certain workers, including accountants, that hold an active license from the state. The Department of Labor's 2024 IC law provides guidance under the Fair Labor Standards Act and reinstates the economic realities test based on six factors. This law rescinds the 2021 Trump-era Independent Contractor Rule, which used similar factors, but singled out certain "core factors". Our study suggests laws encouraging (discouraging) employee (IC) accountant classification improve audit effectiveness, which informs ongoing deliberations of policymakers on these laws. Our study substantiates the PCAOB's assertion that ICs operate as audit "firm personnel" and pose a distinct set of quality control risks that require the careful attention of audit firms (PCAOB 2024).

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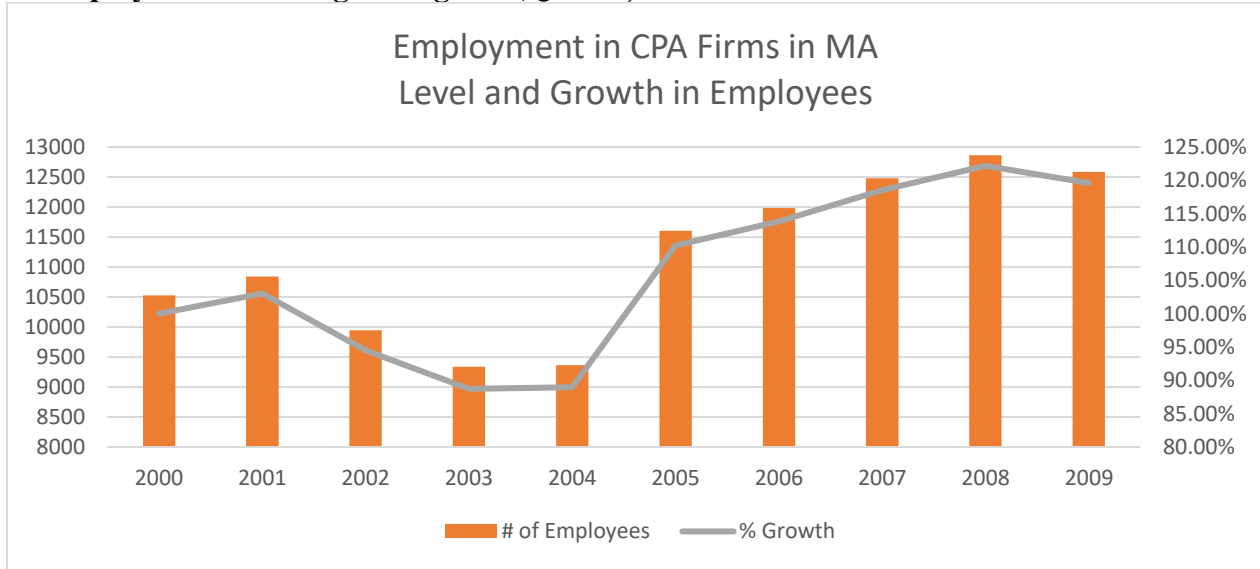Berluti, R. 2009. Independent contractors. *Berluti & McLaughin LLC.*

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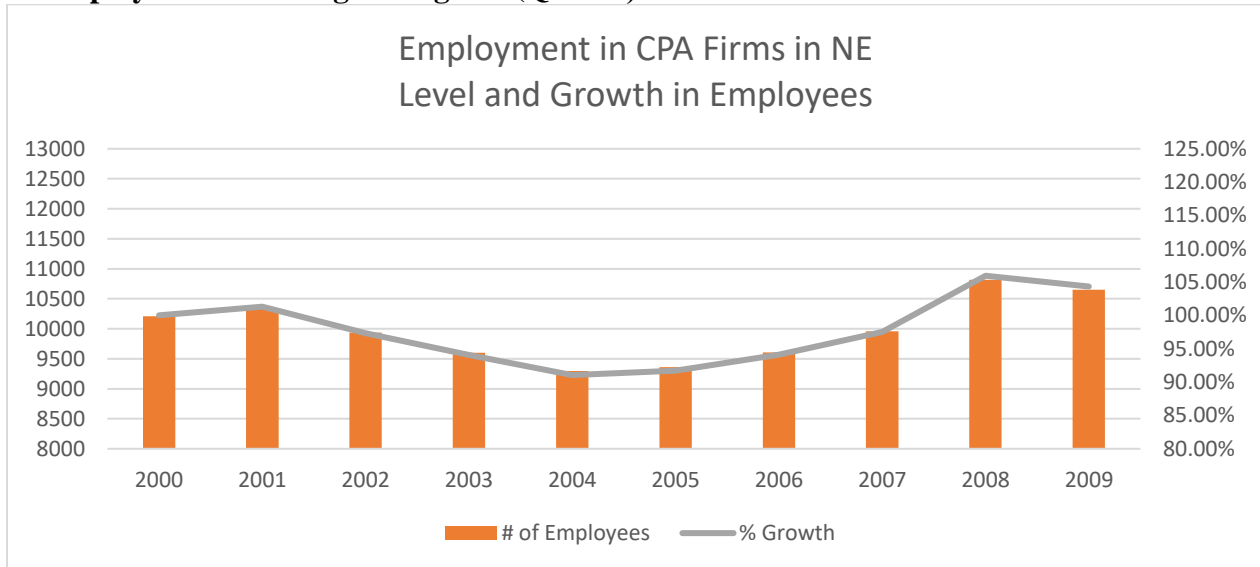
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Figure 1: Time-series of Bureau of Labor Statistics (BLS) data from the Quarterly Census of Employment and Wages Program (QCEW) for "Offices of CPAs" in MA.

Note: Estimates do not include self-employed workers (i.e., independent contractors). The left vertical axis includes number of employees and the right vertical axis includes percent growth relative to 2000. Per the BLS definition, Offices of Certified Public Accountants (CPAs) "comprises establishments of accountants that are certified to audit the accounting records of public and private organizations and to attest to compliance with GAAP." MA is Massachusetts.

Figure 2: Time-series of Bureau of Labor Statistics (BLS) data from the Quarterly Census of Employment and Wages Program (QCEW) for "Offices of CPAs" in NE.
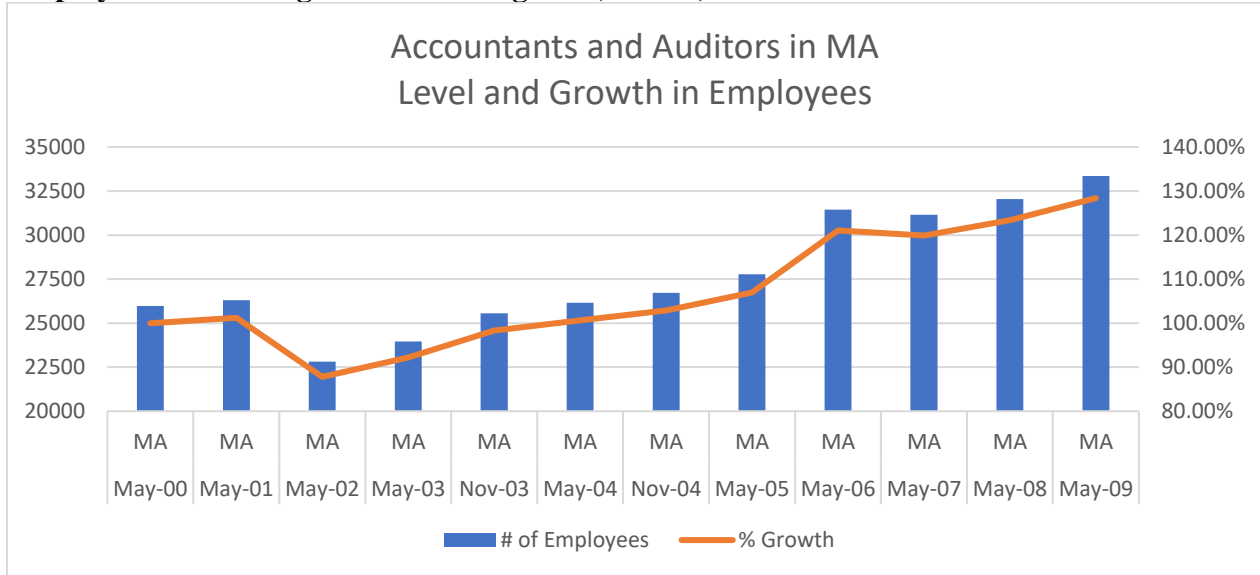

Note: Estimates do not include self-employed workers (i.e., independent contractors). The left vertical axis includes number of employees and the right vertical axis includes percent growth relative to 2000. Per the BLS definition, Offices of Certified Public Accountants (CPAs) "comprises establishments of accountants that are certified to audit the accounting records of public and private organizations and to attest to compliance with GAAP." New England (NE) states are Connecticut, Maine, New Hampshire, Rhode Island, and Vermont but not Massachusetts.

Figure 3: Time-series of Bureau of Labor Statistics (BLS) data from the Occupational Employment and Wage Statistics Program (OEWS) for "Accountants and Auditors" in MA.

Note: Estimates do not include self-employed workers (i.e., independent contractors). Annual snapshots are formed using the last three years of data. The left vertical axis includes number of employees and the right vertical axis includes percent growth relative to 2000. Per the BLS definition, Accountants and Auditors, "examine, analyze, and interpret accounting records to prepare financial statements, give advice, or audit and evaluate statements prepared by others. Install or advise on systems of recording costs or other financial and budgetary data." MA is Massachusetts.

Figure 4: Time-series of Bureau of Labor Statistics (BLS) data from the Occupational Employment and Wage Statistics Program (OEWS) for "Accountants and Auditors" in NE.
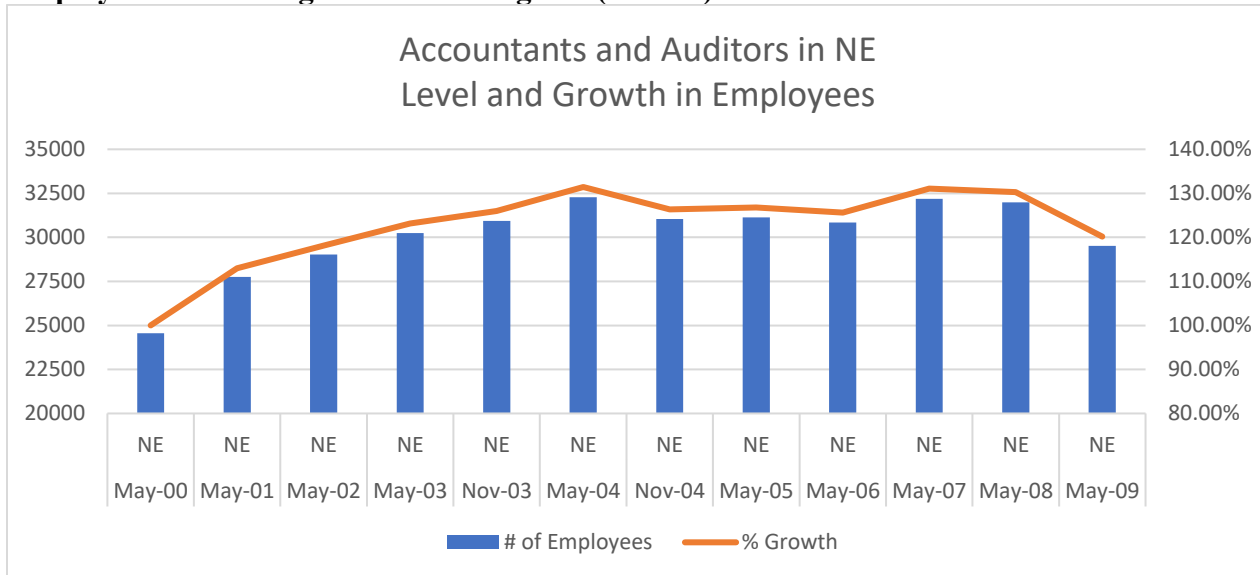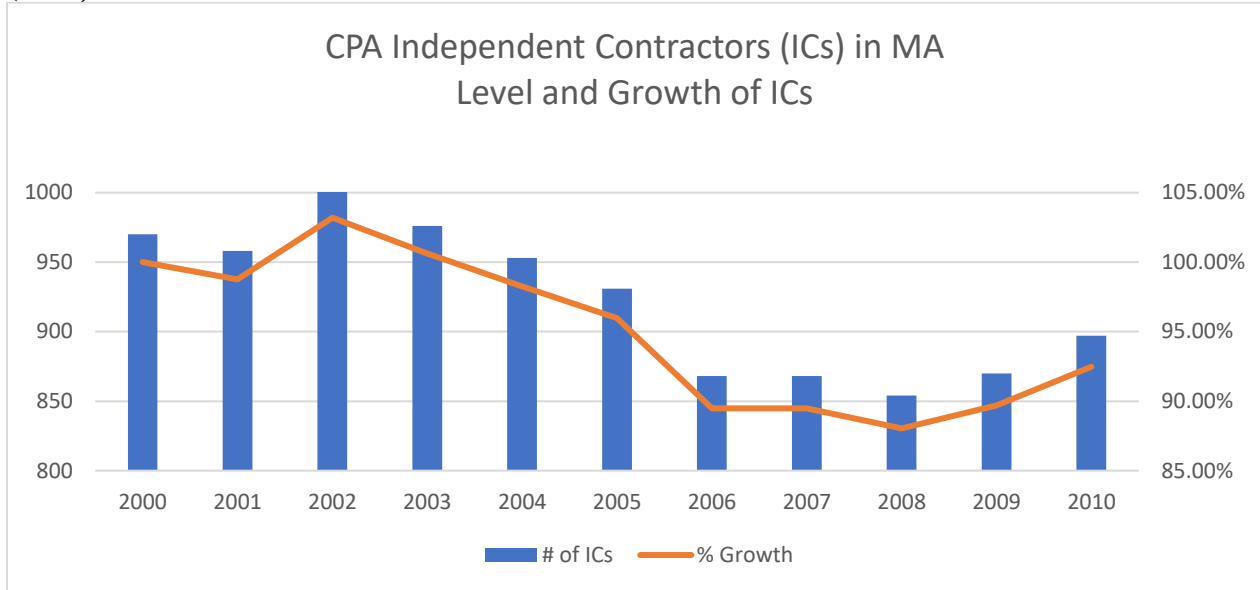

Estimates do not include self-employed workers (i.e., independent contractors). Annual snapshots are formed using the last three years of data. The left vertical axis includes number of employees and the right vertical axis includes percent growth relative to 2000. Per the BLS definition, Accountants and Auditors, "examine, analyze, and interpret accounting records to prepare financial statements, give advice, or audit and evaluate statements prepared by others. Install or advise on systems of recording costs or other financial and budgetary data." New England (NE) states are Connecticut, Maine, New Hampshire, Rhode Island, and Vermont but not Massachusetts.

Figure 5: Time-series of Census Bureau data from the Nonemployer Statistics Program (NES) for "Offices of CPAs" in MA.

CPA Independent Contractors (ICs) in MA
Level and Growth of ICs

Note: Estimates include self-employed workers (i.e., independent contractors) that have no paid employees, are subject to federal income tax, and have greater than $1,000 in gross receipts annually. The left vertical axis includes number of independent contractors (ICs) and the right vertical axis includes percent growth relative to 2000. Per the Census Bureau definition, Offices of Certified Public Accountants (CPAs) "comprises establishments of accountants that are certified to audit the accounting records of public and private organizations and to attest to compliance with GAAP." MA is Massachusetts.

Figure 6: Time-series of Census Bureau data from the Nonemployer Statistics Program (NES) for "Offices of CPAs" in NE.

CPA Independent Contractors (ICs) in NE
Level and Growth of ICs

Note: Estimates include self-employed workers (i.e., independent contractors) that have no paid employees, are subject to federal income tax, and have greater than $1,000 in gross receipts annually. The left vertical axis includes number of independent contractors (ICs) and the right vertical axis includes percent growth relative to 2000. Per the Census Bureau definition, Offices of Certified Public Accountants (CPAs) "comprises establishments of accountants that are certified to audit the accounting records of public and private organizations and to attest to compliance with GAAP." New England (NE) states are Connecticut, Maine, New Hampshire, Rhode Island, and Vermont but not Massachusetts

Figure 7: Time-series of Bureau of Labor Statistics (BLS) data from the Quarterly Census of Employment and Wages Program (QCEW) for "Offices of CPAs" in CA.

Employment in CPA Firms in CA
Level and Growth in Employees

Note: Estimates do not include self-employed workers (i.e., independent contractors). The left vertical axis includes number of employees and the right vertical axis includes percent growth relative to 2000. Per the BLS definition, Offices of Certified Public Accountants (CPAs) "comprises establishments of accountants that are certified to audit the accounting records of public and private organizations and to attest to compliance with GAAP." CA is California.

Figure 8: Time-series of Census Bureau data from the Nonemployer Statistics Program (NES) for "Offices of CPAs" in CA.

Independent Contractors (ICs) in CPA Firms in CA
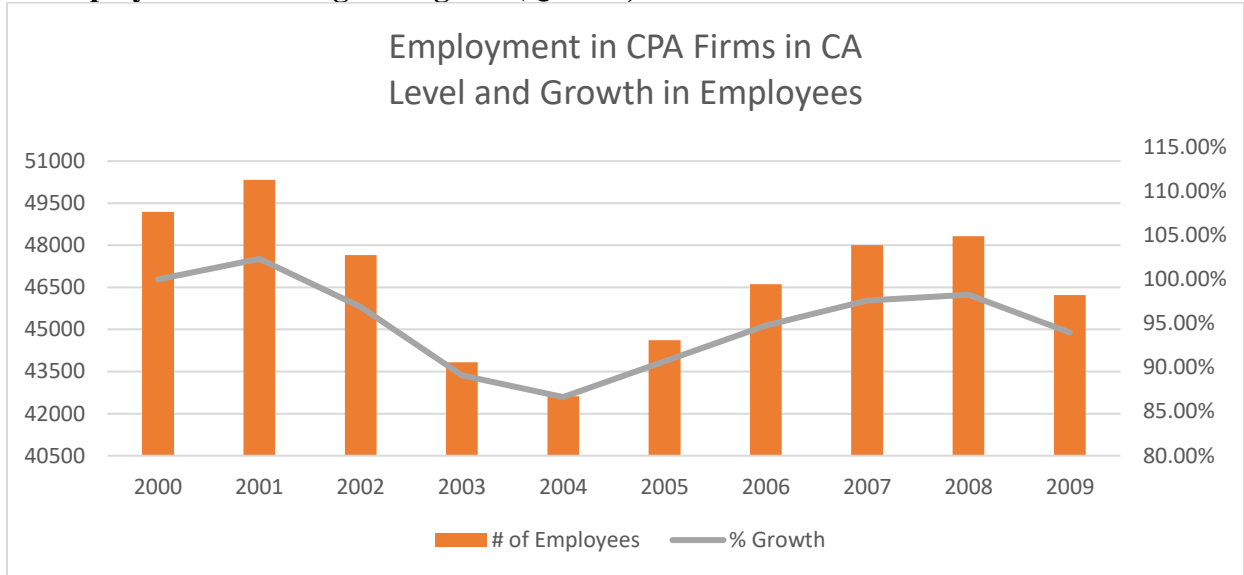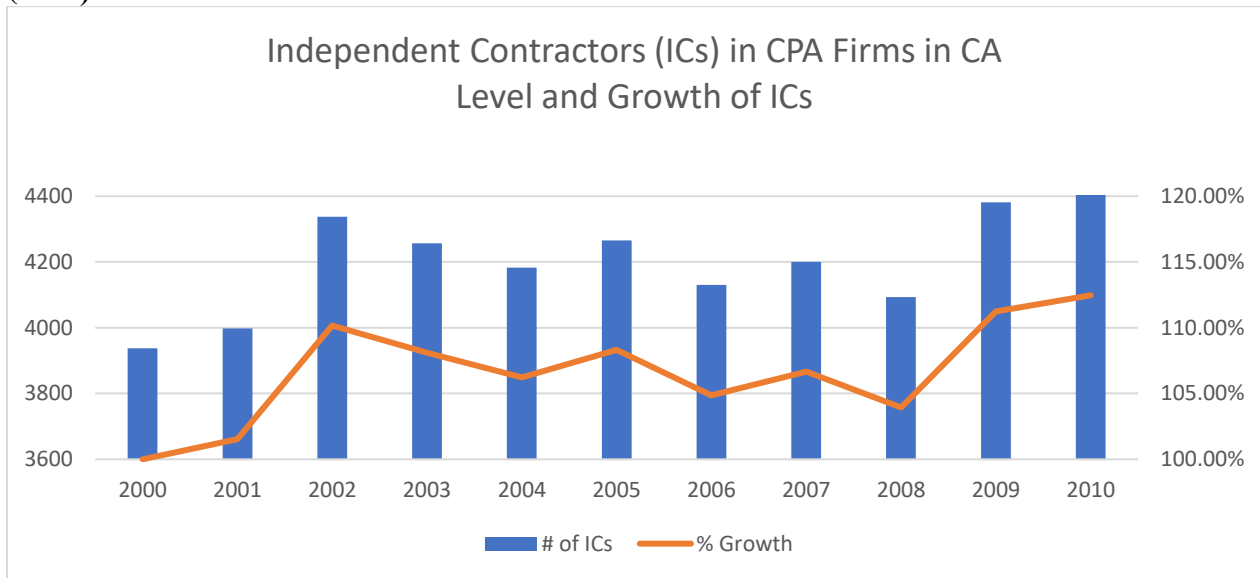Level and Growth of ICs

Note: Estimates include self-employed workers (i.e., independent contractors) that have no paid employees, are subject to federal income tax, and have greater than $1,000 in gross receipts annually. The left vertical axis includes number of independent contractors (ICs) and the right vertical axis includes percent growth relative to 2000. Per the Census Bureau definition, Offices of Certified Public Accountants (CPAs) "comprises establishments of accountants that are certified to audit the accounting records of public and private organizations and to attest to compliance with GAAP. CA is California.

Appendix A: PwC's Flexibility Talent Network (FTN)

Appendix B: Variable Definitions

Outcome Variables:

Annual Restatement	An indicator variable equal to one if the client firm restated the current fiscal year 10-K and zero otherwise.
Quarterly Restatement	An indicator variable equal to one if the client firm restated 10-Q but not 10-K in the current fiscal year and zero otherwise.
Disc Accrual	The signed industry-matched discretionary accruals calculated following Kothari, Leone, and Wasley (2005)
Small_Pft	An indicator variable equal to one if net income before extraordinary items is greater than zero but below 2% of its total assets and zero otherwise.
EPS Forecast Accuracy	The absolute value of (management's last available estimate of EPS before year-end minus actual EPS) multiplied by negative one, divided by year-end price. The estimate of EPS includes a point estimate and the average of the range estimate of EPS.

Other Variables:

Treat	An indicator variable equal to one if the client firm's local audit office is located in Massachusetts and zero otherwise.
Post	An indicator variable equal to one if the client firm's fiscal year-end is in or after June 2004 and zero otherwise.
AuditFirm Ind Exp	The natural log of all audit fees paid by industry clients of the audit firm, less audit fees paid by the focal client.
Client Importance	The percentage of the local audit office's total annual audit fees that are paid by the focal client.
Accelerated Filer	An indicator variable equal to one if the client firm is an accelerated filer and zero otherwise.
Lg Accelerated Filer	An indicator variable equal to one if the client firm is a large accelerated filer and zero otherwise.
Busy	An indicator variable equal to one if the client firm's fiscal year end is in October, November, or December, and zero otherwise.
BigN Auditor	An indicator variable equal to one if the client firm has a Big N audit firm as its auditor and zero otherwise.
Auditor Change	An indicator variable equal to one if the client firm changed its audit firm during the year and zero otherwise.
NAF	Natural log of non-audit fees.
AF	Audit fees paid by the client firm, divided by total assets.
Age	The number of years since the client firm went public.
Size	Natural log of average total assets.
PPE	Average property, plant, and equipment, divided by average total assets.
Leverage	Average long-term debt, scaled by average total assets.

ROA	Operating income before depreciation, divided by average total assets.
MTB	Average market value of equity, divided by average common equity.
Beta	The client firm's beta, estimated using daily returns during the fiscal year.
Accounting Complexity	A client firm-year score of accounting measurement intensity which captures the intensity with which client firms apply Generally Accepted Accounting Principles to map economic transactions onto financial statements. The score is constructed and provided by Andreicovici, van Lent, Nikolaev, and Zhang (2020).
Foreign Income	An indicator variable equal to one if the client firm has nonzero pre-tax foreign income and zero otherwise.
Intangible	An indicator variable equal to one if the client firm has above-median intangible assets.
Extra Item	An indicator variable equal to one if the client firm has nonzero extraordinary items reported in the current fiscal year and zero otherwise.
Merger	An indicator variable equals one if the client firm reported the impact of a merger or acquisition on net income, and zero otherwise.
Operating Segments	The number of operating segments of the client firm.
Geo Dispersion	The number of different states that are mentioned in the firm's 10-K (data provided by García and Norli, 2012).
Client Heavy IC	An indicator variable equals if the client firm is within an industry that is heavily reliant on ICs (Hwang and Kahle 2024). The variable equals one if the client firm in year t is one of the five industries ('Construction', 'Professional and Business Services', 'Other Services', 'Retail Trade', and 'Education and Health Services') with relatively intensive IC usage and zero otherwise.
M&A Active	An indicator variable equal to one if the client firm reports merger & acquisition activity in the two previous fiscal years, and zero otherwise.
Large Local Audit Office	An indicator variable equal to one if the local audit office has a size above the median of the sample audit offices. The audit office size is measured using the natural logarithm of the total local audit office audit fees for all clients other than the client observation.

Survey Variables:

Job Satisfaction_Benefits	An integer value from 1 to 4 coding responses to the question "How would you rate your overall satisfaction over job benefits with the principal job you held" during the survey reference week where 1 signifies "very dissatisfied", 2 "somewhat dissatisfied", 3 "somewhat satisfied", and 4 "very satisfied". Data from NSCG.

Job Satisfaction_Job Security	An integer value from 1 to 4 coding responses to the question "How would you rate your overall satisfaction over job security with the principal job you held" during the survey reference week where 1 signifies "very dissatisfied", 2 "somewhat dissatisfied", 3 "somewhat satisfied", and 4 "very satisfied". Data from NSCG.
Job Satisfaction_Salary	An integer value from 1 to 4 coding responses to the question "How would you rate your overall satisfaction over the salary with the principal job you held" during the survey reference week where 1 signifies "very dissatisfied", 2 "somewhat dissatisfied", 3 "somewhat satisfied", and 4 "very satisfied". Data from NSCG.
Training	An indicator variable equal to one if the individual answered Yes for the question "During the past 12 months, did you attend any work-related training, such as workshops or seminars?" and zero otherwise.
Salary	Respondents' self-reported "basic annual salary on your principal job, before deductions".
Work hrs 50-60 per week	An indicator variable equal to one for respondents who report working on their principal job in a typical workweek between 50 and 59.99 hours and zero otherwise
Work hrs 60-70 per week	An indicator variable equal to one for respondents who report working on their principal job in a typical workweek between 60 and 69.99 hours and zero otherwise.
Work hrs 70-80 per week	An indicator variable equal to one for respondents who report working on their principal job in a typical workweek between 70 and 79.99 hours and zero otherwise.
Work hrs 80+ per week	An indicator variable equal to one for respondents who report working on their principal job in a typical workweek between 80 or more hour and zero otherwise.
Master's Degree	An indicator variable equal to one for respondents whose highest degree is a master's degree and zero otherwise.
Professional Degree	An indicator variable equal to one for respondents whose highest degree is a professional degree and zero otherwise.
Doctoral Degree	An indicator variable equal to one for respondents whose highest degree is a doctorate degree and zero otherwise.
Female	An indicator variable equal to one for respondents whose gender is female and zero otherwise.
Married	An indicator variable equal to one for respondents who report that their marital status is married and zero otherwise.
Divorced	An indicator variable equal to one for respondents who report that their marital status is divorced and zero otherwise.

Table 1. Sample Distribution

State	Adoption Date	Affected Industry	Percentage
MA	**2004-06-01**	**All**	**5.55**
NM	2005-06-01	Construction	0.03
OR	2006-01-01	All	1.13
NJ	2007-07-01	Construction	2.24
IL	2008-01-01	Construction	4.43
NH	2008-01-01	All	0.00
WA	2008-07-01	Construction	1.73
MN	2009-01-01	Construction	3.18
DE	2009-10-01	Construction	0.00
NE	2010-07-01	Construction and Delivery Service	0.47
NY	2010-10-01	Construction	7.93
PA	2011-02-01	Construction	4.61
KS	2011-07-01	All	0.03
UT	2011-07-01	All	0.70
MD	2012-07-01	All	0.96
ME	2013-01-01	All	0.00

This table presents the sample distribution of states that have adopted independent contractor laws. The table shows the name of the state that adopted an independent contractor law, the adoption date, the affected industry, and the distribution of audit firm-year observations by the state where the local audit office is located.

Table 2. Sample Selection

	Observations
Client firm-year observations from Compustat for years 2000 to 2008 with price and asset data:	77,900
Less: firms from the financial industry	(17,895)
Less: missing data to calculating each control variable	(29,638)
Less: missing data to calculate each lagged control variable	(10,116)
Less: missing data for the headquarter state	(1,512)
Less: firm-year observations with local audit offices located in Oregon or New Hampshire	(250)
Main sample (2000-2008):	18,489

This table presents the sample selection procedure to obtain the main sample of client firm-year observations.

Table 3. Descriptive Statistics

			Full Sample Descriptive Statistics			
Variables:	N	Mean	P25	P50	P75	S.D.
Annual Restatement	18,489	0.085	0.000	0.000	0.000	0.279
Quarterly Restatement	18,489	0.015	0.000	0.000	0.000	0.123
Treat	18,489	0.064	0.000	0.000	0.000	0.246
Post	18,489	0.590	0.000	1.000	1.000	0.492
AuditFirm Ind Exp	18,489	17.033	16.447	17.850	18.908	3.315
Client Importance	18,489	0.099	0.011	0.031	0.097	0.176
Accelerated Filer	18,489	0.682	0.000	1.000	1.000	0.466
Lg Accelerated Filer	18,489	0.194	0.000	0.000	0.000	0.395
Busy	18,489	0.789	1.000	1.000	1.000	0.408
BigN Auditor	18,489	0.857	1.000	1.000	1.000	0.350
Auditor Change	18,489	0.079	0.000	0.000	0.000	0.270
NAF	18,489	11.441	10.840	12.080	13.218	3.348
AF	18,489	0.271	0.059	0.140	0.327	0.353
Age	18,489	3.156	2.708	3.219	3.611	0.664
Size	18,489	6.284	4.875	6.129	7.530	1.908
PPE	18,489	0.435	0.143	0.315	0.647	0.371
Leverage	18,489	0.174	0.000	0.107	0.285	0.201
ROA	18,489	0.049	0.021	0.099	0.159	0.218
MTB	18,489	2.989	1.301	2.135	3.666	4.107
Beta	18,489	1.070	0.641	1.005	1.433	0.610
Accounting Complexity	18,489	0.283	0.261	0.288	0.312	0.044
Foreign Income	18,489	0.906	1.000	1.000	1.000	0.292
Intangible	18,489	0.446	0.000	0.000	1.000	0.497
Extra Item	18,489	0.022	0.000	0.000	0.000	0.148
Merger	18,489	0.430	0.000	0.000	1.000	0.495
Operating Segments	18,489	5.367	1.000	3.000	9.000	5.127
Geo Dispersion	18,489	8.593	4.000	6.000	11.000	7.729
Client Heavy IC	18,489	0.168	0.000	0.000	0.000	0.374
Small_Pft	18,489	0.080	0.000	0.000	0.000	0.271
Disc Accrual	17,083	-0.026	-0.083	-0.022	0.034	0.290
EPS Forecast Accuracy	6,478	-0.056	-0.008	-0.002	-0.001	0.306

This table presents the full sample descriptive statistics. All variable definitions are in Appendix B.

Table 4. MICL and Audit Effectiveness

Dependent Variables:	Annual Restatement	Quarterly Restatement
	(1)	(2)
Treat*Post	-0.021***	-0.002
	(-2.957)	(-0.486)
AuditFirm Ind Exp	0.001	-0.000
	(0.983)	(-0.902)
Client Importance	0.105***	-0.001
	(3.028)	(-0.050)
Accelerated Filer	0.006	-0.004
	(0.610)	(-0.645)
Lg Accelerated Filer	-0.005	-0.006*
	(-0.405)	(-1.691)
Busy	-0.010	0.003
	(-1.617)	(1.348)
BigN Auditor	-0.038**	0.005
	(-2.485)	(0.622)
Auditor Change	0.064***	0.013***
	(8.604)	(2.888)
NAF	0.002***	0.000
	(3.650)	(0.509)
AF	0.099***	0.021***
	(9.642)	(5.682)
Age	-0.007	-0.003**
	(-1.557)	(-2.642)
Size	0.007**	0.002**
	(2.499)	(2.121)
PPE	-0.011	-0.000
	(-1.026)	(-0.007)
Leverage	0.025	0.008
	(1.115)	(1.189)
ROA	0.009	-0.009
	(0.771)	(-1.308)
MTB	-0.002***	-0.000**
	(-2.834)	(-2.195)
Beta	0.006	0.000
	(1.293)	(0.131)
Accounting Complexity	0.204***	0.070***
	(2.829)	(3.584)
Foreign Income	-0.017*	-0.006*
	(-1.826)	(-1.880)
Intangible	0.013**	0.003
	(2.005)	(1.290)
Extra Item	0.027	0.003
	(1.444)	(0.328)
Merger	0.002	0.003
	(0.405)	(1.405)
Operating Segments	0.001	-0.000
	(0.987)	(-0.303)
Geo Dispersion	-0.001***	-0.000
	(-2.767)	(-0.663)
Client Heavy IC	-0.007	0.003
	(-0.312)	(0.490)
Observations	18,489	18,489
Adj. R^2	0.057	0.025
Client Industry-Year FEs	YES	YES
Audit Office FEs	YES	YES

This table reports the impact of the Massachusetts Independent Contractor Law (MICL) on audit effectiveness. All columns report tests using four-digit SIC client industry by fiscal year and local audit office fixed effects. All variable definitions are in Appendix B. Heteroskedasticity robust standard errors are clustered by the state where the local audit office is located. T-statistics appear in parentheses below estimated coefficients. *** p<0.01, ** p<0.05, * p<0.10.

Table 5. MICL and Audit Effectiveness – Cross-Sectional Analyses

Dependent Variable:	Annual Restatement		
	Cross-Section = M&A Active	Cross-Section = Big N Auditor	Cross-Section = Large Audit Office
	(1)	(2)	(3)
Treat*Post*Cross-section=1	-0.006	-0.020***	-0.018**
	(-0.596)	(-2.884)	(-2.287)
Treat*Post*Cross-section=0	-0.026***	0.001	-0.011
	(-3.376)	(0.080)	(-0.703)
Controls	YES	YES	YES
Observations	18,489	18,489	18,489
Adj. R^2	0.057	0.057	0.057
Client Industry-Year FEs	YES	YES	YES
Audit Office FEs	YES	YES	YES

This table reports the impact of the Massachusetts Independent Contractor Law (MICL) on audit effectiveness, exploiting cross-sectional variation. All columns report tests using four-digit SIC client industry by fiscal year and local audit office fixed effects. All variable definitions are in Appendix B. Heteroskedasticity robust standard errors are clustered by the state where the local audit office is located. T-statistics appear in parentheses below estimated coefficients. *** p<0.01, ** p<0.05, * p<0.10.

Table 6. MICL as well as Six Other IC Law Changes and Audit Effectiveness

Dependent Variables:	Annual Restatement (1)	Quarterly Restatement (2)
Treat*Post	**-0.020****	**0.003**
	(-2.071)	**(0.408)**
AuditFirm Ind Exp	-0.002	-0.000
	(-1.315)	(-0.435)
Client Importance	0.014	0.007
	(0.523)	(1.217)
Accelerated Filer	0.013	0.001
	(1.436)	(0.370)
Lg Accelerated Filer	-0.010	-0.002
	(-1.393)	(-1.105)
Busy	0.018*	0.001
	(1.857)	(0.444)
BigN Auditor	-0.012	0.011
	(-0.594)	(1.561)
Auditor Change	-0.016	0.019***
	(-1.520)	(4.861)
NAF	-0.001	0.000
	(-1.224)	(0.868)
AF	0.001	0.012***
	(0.051)	(2.790)
Age	0.021***	-0.006***
	(3.810)	(-5.177)
Size	-0.010***	0.001
	(-2.876)	(1.061)
PPE	-0.025*	-0.001
	(-1.686)	(-0.221)
Leverage	0.020	0.003
	(1.374)	(0.629)
ROA	0.010	-0.014**
	(0.905)	(-2.624)
MTB	0.000	0.000
	(0.468)	(0.239)
Beta	0.006	0.000
	(1.271)	(0.116)
Accounting Complexity	0.055	0.063***
	(0.575)	(2.801)
Foreign Income	-0.018**	-0.004
	(-2.457)	(-1.468)
Intangible	-0.007	0.004**
	(-1.239)	(2.026)
Extra Item	0.012	0.002
	(0.439)	(0.230)
Merger	0.004	0.003*
	(0.634)	(1.937)
Operating Segments	0.001	0.000
	(1.597)	(0.577)
Geo Dispersion	-0.000	0.000
	(-0.155)	(0.275)
Client Heavy IC	-0.010	0.002
	(-0.605)	(0.502)
Observations	92,382	92,382
Adj. R^2	0.067	0.012
Client Industry-Year FEs*Cohort	YES	YES
Audit Office FEs*Cohort	YES	YES

This table reports the impact of seven states adoption of independent contractor laws from 2004-2013 on audit effectiveness, with a cohort stacked DID research design. The states that adopted broadly applicable independent contractor laws are Massachusetts, Oregon, New Hampshire, Kansas, Utah, Maryland, and Maine (see Table 1 for adoption dates). All columns report tests using four-digit SIC client industry by fiscal year and local audit office fixed effects. All variable definitions are in Appendix B. Heteroskedasticity robust standard errors are clustered by the state where the local audit office is located. T-statistics appear in parentheses below estimated coefficients. *** p<0.01, ** p<0.05, * p<0.10.

Table 7. MICL and Client Firm Outcomes - Falsification Analyses

	Panel A: MICL and Internal Information Environment
Dependent Variable:	*EPS Forecast Accuracy*
*Treat*Post*	**-0.058**
	(-1.343)
Controls	YES
Observations	6,478
Adj. R^2	0.205
Client Industry-Year Fes	YES
Audit Office Fes	YES

	Panel B: MICL and MA Client Firm with Non-MA Audit Firm
Dependent Variable:	*Annual Restatement*
*Treat*Post*	**0.088**
	(0.762)
Controls	YES
Observations	15,801
Adj. R^2	0.057
Client Industry-Year Fes	YES
Audit Office Fes	YES

	Panel C: Construction-Industry-Only IC Law Changes and Audit Effectiveness
Dependent Variable:	*Annual Restatement*
*Treat*Post*	**0.009**
	(0.813)
Controls	YES
Observations	118,903
Adj. R^2	0.057
Client Industry-Year FEs*Cohort	YES
Audit Office FEs*Cohort	YES

This table reports a series of falsification tests. Panel A shows the impact of the Massachusetts Independent Contractor Law (MICL) on the internal information environment. Panel B shows the impact of MICL on audit effectiveness when the client firm is located in MA but the local audit office of the audit firm is outside of MA. Panel C shows the impact of MICL on audit effectiveness in states that adopted IC laws that only apply to construction industry firms (see Table 1 for adoption dates). Client firm-year observations with local audit offices from states listed in Table 1 with broadly applicable IC laws are dropped as these states have pre-existing IC laws. All columns report tests using four-digit SIC client industry by fiscal year and local audit office fixed effects. All variable definitions are in Appendix B. Heteroskedasticity robust standard errors are clustered by the state where the local audit office is located. T-statistics appear in parentheses below estimated coefficients. *** p<0.01, ** p<0.05, * p<0.10.

Table 8. AB5 and Audit Effectiveness

Dependent Variables:	Annual Restatement (1)	Quarterly Restatement (2)
Treat*Post	**0.007**	**-0.006**
	(0.608)	**(-1.108)**
AuditFirm Ind Exp	0.001	-0.002*
	(0.571)	(-1.981)
Client Importance	-0.008	-0.006
	(-0.187)	(-0.317)
Accelerated Filer	0.041**	0.014
	(2.099)	(1.552)
Lg Accelerated Filer	-0.011	0.012
	(-0.781)	(1.621)
Busy	-0.005	-0.006
	(-0.381)	(-1.655)
BigN Auditor	-0.073	-0.012*
	(-1.299)	(-1.918)
Auditor Change	0.035	-0.003
	(1.138)	(-0.298)
NAF	-0.001	-0.001
	(-0.689)	(-1.443)
AF	0.056	0.018
	(1.398)	(1.405)
Age	-0.013	-0.003
	(-0.643)	(-0.802)
Size	0.000	-0.001
	(0.077)	(-0.450)
PPE	0.003	0.002
	(0.145)	(0.281)
Leverage	-0.003	0.008
	(-0.135)	(0.622)
ROA	0.049	0.006
	(1.430)	(0.325)
MTB	-0.001*	-0.000
	(-1.721)	(-0.387)
Beta	0.018**	0.005
	(2.359)	(0.559)
Foreign Income	0.009	0.005
	(1.005)	(1.160)
Intangible	0.006	0.004
	(0.770)	(0.950)
Merger	-0.001	0.005
	(-0.055)	(1.349)
Operating Segments	0.002*	-0.000
	(1.697)	(-0.257)
Geo Dispersion	-0.000	0.000
	(-0.115)	(0.166)
Client Heavy IC	-0.014	-0.009
	(-0.886)	(-0.833)
Observations	4,500	4,500
Adj. R^2	0.053	0.013
Client Industry-Year FEs	YES	YES
Audit Office FEs	YES	YES

This table reports the impact of the California Independent Contractor Law – Assembly Bill 5 (AB5) on audit effectiveness between 2017 and 2022. Client firm-year observations with local audit offices from states listed in Table 1 are dropped as these states have pre-existing IC laws. All columns report tests using four-digit SIC client industry by fiscal year and local audit office fixed effects. All variable definitions are in Appendix B. Heteroskedasticity robust standard errors are clustered by the state where the local audit office is located. T-statistics appear in parentheses below estimated coefficients. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table 9. MICL and Audit Effectiveness - Dynamic Analysis

	Main Sample: 2000-2008	Extended Sample: 2000-2010
Dependent Variable:	*Annual Restatement*	
	(1)	(2)
Treat Year 2000*	0.001	0.001
	(0.045)	(0.075)
Treat Year 2001*	-0.019	-0.019
	(-1.532)	(-1.557)
Treat Year 2003*	0.002	0.000
	(0.212)	(0.016)
Treat Year 2004*	**-0.022**	**-0.023**
	(-0.819)	**(-0.838)**
Treat Year 2005*	**-0.023***	**-0.021***
	(-1.992)	**(-1.791)**
Treat Year 2006*	**0.001**	**0.002**
	(0.049)	**(0.108)**
Treat Year 2007*	**-0.002**	**-0.003**
	(-0.262)	**(-0.363)**
Treat Year 2008*	**-0.029**	**-0.026***
	(-1.616)	**(-1.676)**
Treat Year 2009[+]*		**-0.026****
		(-2.228)
Controls	YES	YES
Observations	18,489	22,736
Adj. R^2	0.057	0.048
Client Industry-Year FEs	YES	YES
Audit Office FEs	YES	YES

This table reports the impact of the Massachusetts Independent Contractor Law (MICL) on audit effectiveness, showing a dynamic analysis of the impact of MICL across time. All columns report tests using four-digit SIC client industry by fiscal year and local audit office fixed effects. All variable definitions are in Appendix B. Heteroskedasticity robust standard errors are clustered by the state where the local audit office is located. T-statistics appear in parentheses below estimated coefficients. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Table 10. MICL and Audit Effectiveness – Alternative Measures and Entropy Balancing

Panel A: Discretionary Accruals	
Dependent Variable:	*Disc Accrual*
*Treat*Post*	**-0.019***
	(-1.761)
Controls	YES
Observations	17,083
Adj. R^2	0.280
Client Industry-Year FEs	YES
Audit Office Fes	YES
Panel B: Small Profits	
Dependent Variable:	*Small_Pft*
*Treat*Post*	**-0.017****
	(-2.224)
Controls	YES
Observations	18,489
Adj. R^2	0.100
Client Industry-Year FEs	YES
Audit Office Fes	YES
Panel C: Entropy Balancing	
Dependent Variable:	*Annual Restatement*
*Treat*Post*	**-0.018****
	(-2.144)
Controls	YES
Observations	18,489
Adj. R2	0.177
Client Industry-Year FEs	YES
Audit Office Fes	YES

This table reports the impact of the Massachusetts Independent Contractor Law (MICL) on discretionary accruals (Panel A), client firms' reporting of small profits (Panel B), and entropy balancing (Panel C). All columns report tests using four-digit SIC client industry by fiscal year and local audit office fixed effects. All variable definitions are in Appendix B. Heteroskedasticity robust standard errors are clustered by the state where the local audit office is located. T-statistics appear in parentheses below estimated coefficients. *** p<0.01, ** p<0.05, * p<0.10.

Table 11. MICL and Job Satisfaction – Survey Analysis

Dependent Variables:	Job Satisfaction_Benefits (1)	Job Satisfaction_Job Security (2)	Job Satisfaction_Salary (3)	Job Training (4)
Treat	-0.087	-0.155	-0.024	-0.101
	(-0.805)	(-1.507)	(-0.244)	(-1.563)
Post	-0.295***	-0.121	-0.117	-0.043
	(-2.686)	(-1.261)	(-1.152)	(-0.494)
Treat*Post	**0.233**	**0.403**	**0.313***	**0.013**
	(1.017)	**(2.144)**	**(1.653)**	**(0.082)**
Salary	0.284***	0.114*	0.244***	-0.014
	(2.893)	(1.790)	(3.396)	(-0.271)
Work hrs 50-60 per week	-0.224*	-0.240**	0.036	-0.089
	(-1.878)	(-2.251)	(0.342)	(-0.971)
Work hrs 60-70 per week	-0.254	0.304	-0.253	-0.123
	(-0.905)	(1.471)	(-0.761)	(-0.509)
Work hrs 70-80 per week	0.625***	0.588***	-0.287***	-0.714***
	(5.781)	(7.299)	(-3.792)	(-11.000)
Work hrs 80+ per week	-1.235*	-0.549	-0.739*	-0.398
	(-1.795)	(-1.549)	(-1.838)	(-1.304)
Master's Degree	0.146	0.023	0.124	0.069
	(1.260)	(0.208)	(1.281)	(0.871)
Doctoral Degree	0.585***	0.618***	0.071	-0.445***
	(2.939)	(4.212)	(0.328)	(-3.167)
Professional Degree	-0.045	0.256	-0.485	-0.070
	(-0.141)	(1.264)	(-1.306)	(-0.375)
Female	0.004	0.109	-0.110	-0.079
	(0.036)	(1.235)	(-1.279)	(-1.014)
Married	-0.151	-0.042	0.251**	-0.014
	(-1.291)	(-0.410)	(2.407)	(-0.152)
Divorced	0.063	-0.430*	0.050	-0.198
	(0.381)	(-1.706)	(0.219)	(-1.155)
Observations	717	717	717	717
Adj. R^2	0.073	0.063	0.112	0.026

This table reports the impact of the Massachusetts Independent Contractor Law (MICL) on accountant worker job satisfaction. The sample is based on data from the 2003 and 2010 editions of the National Survey of College Graduates (NSCG). We restrict our sample to members of the "accountants, auditors, and other financial specialists" occupation (code 721510). Treat is an indicator variable equal to one if the accountant is from the New England region, and zero if the accountant is from the Pacific region. Post is an indicator variable equal to one if the survey was conducted in 2010, and zero if it was conducted in 2003. Our reported results come from procedures (i.e., the survey weighted OLS method) that account for survey design characteristics and corrects for non-random sampling biases. In the NSCG, the probability weights are specified by the WTSURVY variable. All variable definitions are in Appendix B. T-statistics appear in parentheses below estimated coefficients. *** p<0.01, ** p<0.05, * p<0.10.

Table 12. MICL and Audit Effectiveness - Alternative Benchmark States

Panel A: Sample Limited to New England and Pacific region states		
Dependent Variables:	*Annual Restatement*	*Quarterly Restatement*
	(1)	(2)
*Treat*Post*	-0.024***	-0.000
	(-4.303)	(0.146)
Controls	YES	YES
Observations	4,802	4,802
Adj. R2	0.060	0.040
Client Industry-Year FEs	YES	YES
Audit Office FEs	YES	YES
Panel B: Sample Limited to Massachusetts and California		
Dependent Variables:	*Annual Restatement*	*Quarterly Restatement*
	(1)	(2)
*Treat*Post*	-0.022***	0.002
	(-7.764)	(1.421)
Controls	YES	YES
Observations	3,951	3,951
Adj. R2	0.062	0.003
Client Industry-Year FEs	YES	YES
Audit Office FEs	YES	YES

This table reports the impact of the Massachusetts Independent Contractor Law (MICL) on audit effectiveness, restricting the sample to client firm-year observations with local audit offices in the New England and Pacific regions (Panel A) or, alternatively, Massachusetts and California (Panel B). All columns report tests using four-digit SIC client industry by fiscal year and local audit office fixed effects. All variable definitions are in Appendix B. Heteroskedasticity robust standard errors are clustered by the state where the local audit office is located. T-statistics appear in parentheses below estimated coefficients. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.