Retention Costs or Human Capital Investments: A Dual Perspective on Employer-Sponsored Health Benefits*

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Abstract

Employer-sponsored health insurance is the predominant coverage source for the U.S. workforce, yet the rationale behind firms' provision of these benefits remains debated. We examine two primary motivations: as a retention mechanism reducing employee turnover, and as a human capital investment enhancing workforce productivity. To disentangle these perspectives, we exploit policy-induced shocks to labor mobility and track firms' benefit adjustments. We employ a stacked difference-in-differences approach using novel datasets on health plan details, individual healthcare utilization, and state-level variations in non-compete agreement (NCA) enforceability from 2013 to 2020. Our results show that increased NCA enforceability leads firms to lower premiums primarily by shifting to High-Deductible Health Plans (HDHPs). This shift, in turn, boosts HDHP enrollment rates and significantly reshapes healthcare utilization among affected employees, leading to fewer preventive care visits but a greater incidence of severe, high-cost medical procedures. Overall, our findings support the retention cost perspective while also highlighting the unintended long-term consequences of such cost-saving strategies.

Keywords: Health care; Non-wage benefits; Labor mobility; Non-compete agreement; Labor Retention

JEL classification: J32, G32, I11, M12, J41

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"We are spending more per vehicle for health care than we are for steel."

— Bill Ford, Ford Motor's CEO, 2004

1 Introduction

Employer-sponsored health insurance is a cornerstone of the U.S. labor market, extending coverage to over 60% of the working population (approximately 164.7 million people) in 2023.[1] How does a firm benefit from providing healthcare insurance to its employees? Addressing this question carries profound implications for both firm performance and employee welfare. On one hand, rising healthcare costs impose significant constraints on firm growth. For instance, in 2023 private businesses spent $894.0 billion on healthcare, accounting for 18% of total U.S. health expenditures.[2] On the other hand, there is a growing emphasis on employee benefits and well-being as a key component of corporate social responsibility. Uncovering employer's underlying rationale for health insurance provision thus sheds light on how firms navigate the trade-off between preserving profits and ensuring employee well-being.

In this paper, we explore two classic views that characterize employer motivations in healthcare coverage. The first is the *retention cost* view, which posits that healthcare expenditures function as non-pecuniary labor costs for attracting and retaining employees. Because employer-sponsored health benefits are tax-exempt, they hold greater value for workers than if purchased outside with after-tax dollars, and employers often secure more favorable rates through economies of scale and stable risk pools. Given the high cost of healthcare in the United States, offering a more generous health plan serves as a powerful retention tool. This argument dates back to the origins of employer-sponsored plans,

[1] See "Employer-Sponsored Health Insurance 101," KFF (2024), https://www.kff.org/health-policy-101-employer-sponsored-health-insurance/?entry=table-of-contents-introduction (last accessed: March 2025).

[2] See "National Health Expenditures 2023 Highlights," CMS (2024), https://www.cms.gov/files/document/highlights.pdf (last accessed: March 2025).

which emerged as a substitute for salary increases under the wage control policy during World War II to compete for talent. Supporting this perspective, existing literature has documented the "job lock" effect of health insurance (e.g., Madrian 1994; Garthwaite et al. 2014; Ouimet and Tate 2023).

The second is the *human capital investment* view. As with education and on-the-job training, health is a crucial aspect of human capital (Mushkin 1962). Improved employee health can reduce absenteeism and presenteeism, and increase productivity (e.g., Boles et al. 2004). Health therefore is an investment good that enhances future labor productivity (Grossman 1972; Ehrlich and Becker 1972). This perspective also serves as a key assumption in earlier analyses of the equilibrium effects of insurance provision in labor search models (Dey and Flinn 2005; Cole et al. 2019; Aizawa and Fang 2020).

It remains an open empirical question of which perspective best explains employer actions. Although these views are not necessarily mutually exclusive, each can predict opposite employer coverage decisions in response to changes in firms' operating condition and regulatory environmental. A prominent example is legal restrictions on labor mobility, for example, the enforcement of non-compete agreements (NCAs). Under the retention cost view, insurance coverage substitutes for legal restrictions. When alternative retention mechanisms constrain job turnover, firms are expected to cut back on health benefit generosity to achieve cost savings, a prediction that aligns with the observed negative impacts of NCAs on wages (e.g., Starr et al. 2021; Johnson et al. 2023a). In contrast, the human capital investment view argues that insurance coverage complements legal restrictions. Since improved health represents a form of general human capital (Becker 1962), employers may underinvest in health benefits due to poaching concerns (Arrow 1962). In this framework, restricting labor mobility enables firms to recoup long-term human capital returns from enhanced coverage, consistent with the documented positive impacts of NCAs on corporate investments (e.g., Jeffers 2024).

These divergent predictions provide an opportunity to identify the primary incentive

behind insurance coverage, by exploiting natural experiments that shift NCA enforcement. NCAs are prevalent, especially in knowledge-intensive industries (Starr et al. 2021), where employees agree not to work for a competitor after their employment period ends. These agreements typically specify the duration, geographic scope, and type of work prohibited. The legal *enforceability* of NCAs, or the conditions under which an employer can impose and uphold them, is determined by state employment law.

To this end, we construct a novel dataset that combines employer-provided health plan information, local insurance market characteristics, individual healthcare enrollment and utilization, as well as NCA enforceability measures. We draw on Form 5500 filings from the U.S. Department of Labor to capture employer-level health plan information, including premium amounts and key plan characteristics. We also incorporate data from proprietary data covering individual-level enrollment records and healthcare utilization details. Lastly, we link these datasets to state-level non-compete agreement (NCA) enforceability measures, updated by Reinmuth and Rockall (2023) from Bishara (2011). This combined dataset enables us to observe both supply-side adjustments by employers and the resulting patterns in employees' health plan choices and utilization.

Our empirical analysis employs a stacked difference-in-differences strategy that leverages state-level variations in NCA enforceability. As a first step, we examine employers' responses to NCA enforcement shocks by analyzing the average insurance premiums of all healthcare plans sponsored by firms. Our findings indicate that an increase in NCA enforceability significantly reduces health insurance premiums at the firm level. Specifically, a typical enforcement-strengthening shock leads to approximately a 4.1% reduction in average insurance premiums among affected firms. We document even stronger treatment effects for firms that offer only a single plan option to their employees, which account for 57% of the sample observations. We argue that this decrease primarily results from firms increasingly offering High-Deductible Health Plans (HDHPs), which are characterized by lower premiums but higher out-of-pocket costs and deductibles for enrollees. The shift

toward HDHPs is evidenced by a rising share of such plans offered at the metropolitan statistical area (MSA)-industry level.

At the individual enrollee level, we provide further evidence that affected employees respond to supply shifts by increasingly adopting HDHPs. The probability of enrolling in an HDHP rises by approximately 4% per year following a typical strengthening of NCA enforceability. Additionally, individual deductibles increase by roughly $150 and family deductibles by about $263 among affected employees. We can illustrate the economic impacts by alternatively comparing time-series averages: when sorting employees into two groups by their state's NCA enforcement, both groups had HDHP adoption rates below 2% in 2013. By 2020, however, the high-enforcement group reached a 19% adoption rate, roughly 30% higher than that of the low-enforcement group. Collectively, these results highlight a remarkable shift toward less generous health plans in employer supply decisions as labor mobility becomes more constrained, consistent with the retention cost perspective's prediction.

Despite adjustments in employers' healthcare provision are motivated by talent retention, we document that the shift toward HDHPs substantially affects healthcare utilization patterns among affected employees for both outpatient and inpatient services.[3] The economic mechanism underlying employees' behavioral changes is as follows. HDHPs require enrollees to pay the full cost of medical services out-of-pocket until their annual expenditures exceed a substantial threshold (approximately $1,500 for individual coverage in our sample), after which insurers begin to share the costs. Because enrollees receive "discounted prices" only for large medical bills, they may delay or skip lower-cost visits, perceiving these services as either less necessary or more financially burdensome. Indeed, employees in states experiencing increased NCA enforcement significantly reduce their utilization of outpatient services costing less than $500. Importantly, they reduced physician

[3]Inpatient care refers to medical treatments requiring hospital admission, typically requiring overnight stays. Outpatient care includes medical services such as doctor visits, diagnostic tests, and minor procedures that do not require hospitalization.

office visits and even forego valuable, zero-cost preventive screenings, a pattern consistent with limited health literacy among enrollees (Baicker et al. 2015). Moreover, the reduction in utilization is most pronounced in the first quarter, immediately after enrollees face an increased "spot price" due to the deductible reset, consistent the effects driven by HDHP adoption.

This reduced utilization in healthcare services is specific to *low-cost* care for affected employees. By contrast, we document increased utilization of higher-cost outpatient services, suggesting that employees delay necessary medical attention until their conditions worsen, leading to costlier care interventions. As a result, the overall impact represents a shift in utilization from preventive care toward more severe conditions that require urgent treatment. Examining inpatient care reveals a parallel pattern of increased severity in hospital admissions following strengthened NCA enforceability. In particular, we categorize hospitalizations into different severity levels based on national average length of stay and complexity based on patient medical conditions, and we document that services classified as top-tier intensity occur significantly more frequently in the treatment group. This finding indicates that initial delay or avoidance of preventive outpatient care ultimately leads to more serious health problems later, resulting in longer, more complex and substantially more costly hospital stays.

Lastly, we document that these shifts ultimately lead to elevated overall medical expenditures for inpatient services in local areas. We confirm that this elevation is not driven by changes in prices, but rather by compositional shifts toward more complex and severe medical conditions. These behavioral changes are likely to deteriorate employees' long-term health, lending support to the human capital perspective. Consequently, employers' supply decisions may reflect either a rational quantification of the net benefits of cost savings or a myopic neglect of the adverse long-term consequences. Our findings serve as a cautionary note for employers adopting cost-reduction strategies by transitioning to HDHPs. The longer-term implications include potential premium increases due to higher

healthcare expenditures and reduced labor productivity resulting from altered healthcare utilization.

Our paper contributes to the literature on understanding corporate decisions in providing healthcare benefits to their employees. The existing literature documents that employer characteristics such as size and financial conditions, rather than employee demand preferences, determine the choice of employer-sponsored plans (Bundorf 2002; Feldman et al. 1997). Consistent with the retention perspective, earlier work documents the "job-lock" phenomenon where health insurance coverage creates incentives for workers to remain in their jobs to maintain coverage (Madrian 1994; Garthwaite et al. 2014). Ouimet and Tate (2023) document that firms use nonwage benefits, including health insurance coverage, to attract and retain more high-wage workers. On the other hand, earlier analyses of the equilibrium effects of insurance provision assume that workers possess "health capital" that influences their productivity and the likelihood of match termination in labor search models (Dey and Flinn 2005; Cole et al. 2019; Aizawa and Fang 2020). For example, in Aizawa and Fang (2020), the model generates a positive correlation between wages, health insurance, and firm productivity because more productive firms tend to match with healthier workers and benefit from them working healthily. These results also suggest that identifying employers' incentives is confounded by unobserved differences in worker and firm quality. We contribute to the literature by contextualizing this question within labor mobility, arguing that the retention and human capital investment incentives predict opposite firm responses to changes in legal constraints on job turnover. This analysis enables us to qualitatively discern the primary incentives driving employers' insurance coverage decisions.

Our work is also closely related to the literature on the labor market implications of rising healthcare costs. A long-standing belief holds that employers pass increases in healthcare costs on to workers dollar for dollar, only through lower wages (Summers 1989; Gruber 1994). In contrast to this "full pass-through" view, Baicker and Chandra (2006) find

that a 10% increase in health insurance premiums reduces the probability of employment by 1.2 percentage points, and recent work by Gao et al. (2022) suggests that higher premiums adversely affect only the employment of lower-income workers, not high-income ones, within a given firm. Regarding the broader effects of rising healthcare costs on corporate outcomes, Tong (2024) documents negative consequences in the form of reduced capital expenditures and R&D spending among public firms, while Aghamolla et al. (2023) highlight increased bankruptcy risks. Differing from the above literature, our focus is on uncovering the underlying incentives behind the health insurance provision. One potential caveat of our results is that firms may underestimate the long-term productivity improvements associated with providing health benefits, leading them to overreact by reducing employment in response to rising healthcare costs.

Our paper complements the growing literature on the effects of NCA enforcement on firm operations and employee welfare. Proponents argue that NCAs protect firms' investments in knowledge and training, reducing spillovers to competitors (Arrow 1962; Starr 2019), and encourage investment in employee training and R&D to foster innovation (Conti 2014; Starr 2019). However, restricted labor mobility limits employees' income growth and weakens their bargaining power, as documented both empirically (Marx and Fleming 2012; Balasubramanian et al. 2020; Johnson et al. 2023a) and theoretically (Gottfries and Jarosch 2023; Potter et al. 2024). Recent studies further highlight the equilibrium economic implications of NCAs: they hinder the diffusion of knowledge and innovation (Reinmuth and Rockall 2023; Johnson et al. 2023b) and negatively affect entrepreneurship by discouraging talent mobility (Ewens and Marx 2018; Jeffers 2024). None of the studies discussed above examine the non-pecuniary impacts of NCAs as we do. By identifying the primary incentive behind insurance coverage, we empirically address the open question of how non-wage benefits change for employees when NCAs are more stringently enforced.

Human capital is a key component of firm organizational capital (Eisfeldt and Pa-

panikolaou 2013). Finally, our paper relates to prior literature that examines how labor mobility influences corporate outcomes such as equity returns (e.g., Donangelo 2014), investments (e.g., Chen et al. 2022; Jeffers 2024), and firm value (e.g., Shen 2021). Closely related is the literature on how firms design compensation structures in response to labor mobility. A classic view holds that, because shareholders can diversify idiosyncratic risks, firms should offer fixed salaries as a form of insurance for workers (see, e.g., Hartman-Glaser et al. 2019; Lustig et al. 2011). However, retention incentives necessitate equity-based and deferred compensation for workers (Sun and Xiaolan 2019; Eisfeldt et al. 2023), which undermines perfect risk sharing. Instead, we document the opposite effects in the non-wage components: with reduced retention incentives, firms under-insure workers through non-pecuniary benefits.

2 Background on Employer-Sponsored Health Care

In the United States, a prominent feature of the health care system is its dependence on the private sector. Employees often favor employer-sponsored plans over ones from the individual market due to cost advantages from economies of scale and favorable tax treatment. Health benefits are offered by most large firms even before the mandate by the Affordable Care Act (ACA), and are non-trivial parts of workers' compensation.[4] According to the Kaiser Family Foundation's 2023 Employer Health Benefits Survey, the average annual premium for family health coverage reached $23,968, with workers contributing $6,575. On average, covered employees paid 17% of single coverage premiums and 29% for family coverage, with employers covering the majority of costs. This employer contribution ratio has remained stable over time.

Employers may choose a number of methods to fund health care plans. A plan can be

[4]Health benefits account for 7%–10% of employer costs for employee compensation across industries and sectors. See Economic News Release from the Bureau of Labor Statistics https://www.bls.gov/news.release/ecec.toc.htm (last accessed: March 2025).

fully insured, self-insured, or a combination of these two plan funding methods (mixed insured). In a traditional fully insured plan, employers purchase health policies from outside health insurance companies. With self-insurance, employers pay employees' medical claims directly, setting up tax-exempt reserves for claim payouts and making regular contributions to these reserves. Self-insured firms still engage insurance companies as third-party administrators (TPAs) for network access, plan design, and medical claim processing, but insurers earn less because they extract mark-up only through administrative services. Additionally, some employers also buy stop-loss insurance for catastrophic losses.

Firms usually offer a menu of health plan options to employees that vary in the restrictiveness of the provider network or in the ratio between out-of-pocket expenses and annual premiums. HMO (health maintenance organization), POS (point of service), PPO (preferred provider organization), and indemnity plans are the most common traditional plans. These plans vary in restrictiveness, with HMOs being the most restrictive, covering only in-network providers, and indemnity plans being the least restrictive, with no limitations on the network status of providers. Besides those traditional plans, high deductible health plans gained popularity since the mid-2000s.

High Deductible Health Plans HDHPs are health insurance policies with higher deductibles than traditional plans. They offer lower premiums but require individuals to pay more out-of-pocket for medical expenses. HDHPs can be used with or without a Health Savings Account (HSA), which allows individuals to save pretax income to help cover these higher costs. With an HDHP, individuals must pay for most medical services themselves until they reach a set deductible amount. Once the deductible is met, the insurance plan begins sharing costs through coinsurance, meaning the individual pays a percentage of expenses while the insurer covers the rest. HDHPs also have an out-of-pocket maximum, which limits how much a person has to pay in a year. After reaching this limit, insurance

pays for all covered medical costs.[5]

HDHPs are often seen as a form of catastrophic coverage, mainly protecting against large, unexpected medical bills. While they help limit financial risk in worst-case situations, they also require individuals to handle higher upfront costs compared to traditional health insurance plans.

The adoption of HDHPs grew rapidly in the 2000s and 2010s but has stabilized in recent years. In employer-sponsored insurance, about 29% of covered workers were enrolled in an HDHP with a savings option in 2023 (KFF, 2023). PPO plans remain the single most common plan type (covering around 47% of workers). In 2023, the HSA-qualified HDHP single coverage plan has an annual premium of $7,662, with a general annual deductible of $2,518 and an out-of-pocket maximum of $4,415. Compared to traditional plans, the premium for an HSA-qualified HDHP is lower than that of PPO plans ($9,119) and HMO plans ($8,203), making it a more affordable option in terms of upfront costs (KFF, 2023). However, this lower premium comes with significantly higher deductibles and out-of-pocket expenses, potentially increasing financial risk for enrollees who require frequent medical care.

3 Data and Empirical Design

3.1 Form 5500

The Employee Retirement Income Security Act of 1974 requires firms with 100 or more participants in their welfare benefit plan to file a Form 5500, maintained by the Department of Labor, to report plan coverage and characteristics. A firm can have multiple benefit plans and must submit separate filings for each plan it sponsors. Each plan contains infor-

[5]For 2024, a HSA-qualified HDHP must have a deductible of at least $1,600 for self-only coverage, or $3,200 for family coverage. Annual out-of-pocket expense maximums (deductibles, co-payments and other amounts, but not premiums) cannot exceed $8,050 for self-only coverage in 2024, or $16,100 for family coverage (IRS 2023).

mation about the types of benefits offered (e.g., health, dental, vision, life insurance), the number of participants, and other plan characteristics, such as funding method. Several schedules with various purposes may be attached to the main form; the one most relevant for this study is Schedule A, "Insurance Information," which contains insurer information and insurance expenses. A firm must attach a Schedule A form for each insurer it hires. The raw data are available by filing year from 1999 onward.

For each firm, we extract the schedules corresponding to health benefits and aggregate the insurance expenses reported on Schedule A for all covered participants in each qualifying plan. To measure the costliness of these plans, we define premiums on a per capita basis by normalizing total insurance expenses by the total number of participants across all qualifying policies for each firm. The underlying rationale is that employers typically pay for health policies and administrative services on a per-participant basis. Our measure is effectively an average individual premium across plans, weighted by the number of participants. For a robustness check, we show that our results hold when restricting the sample to firms with only one qualifying plan, thereby alleviating concerns that enrollee demand contaminates these weights.

For each plan, we also identify the funding method, that is, fully, self- or mixed insured, using several factors, including premium per participant, third-party administrator (TPA) status, stop-loss status, and funding source. Importantly, funding status indicates the extent to which insurance expenses reported on Form 5500 capture total healthcare costs. For fully insured plans, insurance expenses approximate the entire healthcare cost paid by companies to the insurance firms. For self-insured plans, however, insurance expenses consist mostly of administrative fees and exclude medical claim costs that employers pay directly from their own cash reserves,[6] and thus represent only a portion of the employers' total healthcare costs. Since expenses for self-insured plans do not reflect the actual prices of health plans, we restrict our sample to firms in which at least 90% of covered partic-

[6]Insurance expenses for self-insured firms include costs such as stop-loss insurance premiums, network access fees, and TPA fees.

ipants are fully insured. Further details on the premium calculation are provided in the Internet Appendix A.

Although the main types of plan, such as HMO and PPO are indicated in Form 5500, the dataset does not explicitly distinguish HDHPs from other types of employer-sponsored health insurance, nor does it provide information on deductibles, coinsurance, or copayments. Nevertheless, it contains valuable information on firms' health insurance costs and benefit provisions.

3.2 MarketScan

We complement Form 5500 data with the Truven Health MarketScan Research Database (hereafter "MarketScan"), which collects information on healthcare utilization and enrollment in employer-sponsored plans from approximately 350 payers. These payers include large commercial insurance companies such as Aetna and Blue Cross Blue Shield. An enrollee may be either an employee of a large employer or one of their family dependents. Most relevant to our study, a subset of enrollees, for example 26 million in 2016, have their insurance coverage information reported in the MarketScan Benefit Plan Design (BPD) Database, covering the period from 2013 to 2020. For each enrollee, the database provides details on insurance type, deductible amounts, out-of-pocket maximums, copay rates, and coinsurance rates, which allow us to identify HDHP enrollment. In addition, MarketScan reports claims and encounter data for both inpatient and outpatient visits, including payments, diagnoses, procedures, and patient demographics.

A limitation of MarketScan is that enrollees are highly de-identified to protect patient privacy. Each enrollee is assigned an encrypted "Enrollee ID" that remains consistent across all tables, plans, databases, and years. However, if an Enrollee ID that appears in earlier years discontinues in subsequent years, this does not necessarily indicate that the individual has died or switched to plans provided by non data-contributing payers. Instead, if an employee changes employer and both the previous and new employers are contained in

the MarketScan, the person-identifiers will change. To ensure tractability and consistent identification, we impose the following restrictions: (1) the enrollee must be an employee rather than a dependent; (2) the enrollee must have been between 21 and 55 years of age in 2013, to avoid potential selection into Medicare Advantage plans; (3) the enrollee must have been fully employed with a complete plan enrollment history throughout the sample period. Over 186,000 employees satisfy these requirements, forming the basis for our stacked event-study sample.

Due to privacy concerns, MarketScan discontinued reporting the encrypted "Contributor ID" after 2013, which prevents researchers from linking each enrollee to a (de-identified) employer. Instead, each enrollee is associated with a geographic location at the MSA level and an industry classification (one of ten broad categories). To capture local supply decisions, we group all unique insurance plans in which employees are enrolled by each MSA-industry combination on an annual basis, referred to as the employer-sponsored plan "menu." We then analyze whether at least one HDHP is offered in the menu and calculate the fraction of HDHPs among all unique plans.

3.3 Empirical Design

NCA enforcement is governed by local employment law at the state level. For example, considerable variation exists across states in the criteria used to define a "reasonable" NCA and in what is regarded as a valid business interest justifying such an agreement. Bishara (2011) developed a set of seven questions to assess NCA enforceability, with each question scoring out of ten and multiplied by a weight to produce a total score of 600. For instance, one question asks how courts handle overly broad NCAs (weight $= 10$), with possible responses of reformation (10 points), blue pencil (5 points), or red pencil (0 points). Our empirical strategy relies on precedent-setting court rulings and the statutory changes that affect enforceability within states in our sample. For example, the 2015 Arkansas Act 921 embraced the blue pencil rule (previously red pencil), thereby increasing the enforceability

index by 50 (5×10). Given that our sample period spans from 2013 to 2020, we use the index extended by Reinmuth and Rockall (2023) to identify enforcement shocks during this period.

As states in our sample changed the legal enforceability of NCAs at different years, we adopt a stacked difference-in-differences (DiD) empirical strategy to address concerns with staggered DiD designs using two-way fixed effects. To start, we apply the following criteria to construct our treatment group: First, the legal events must have occurred between 2014 and 2018 to ensure sufficient pre- and post-treatment observations, allowing us to validate the parallel trends assumption. Second, we include only those states where the court rulings were sustained and not subsequently reversed during our sample period. Third, in cases where a state experienced multiple events reinforcing the ruling over time (e.g., multiple strengthening events), we consider only the first treatment occurrence. Overall, six event states meet all these requirements. We then construct "event stacks," each centered on a state that experienced a policy shock, by using its neighboring states without any enforcement changes in the sample as control states. Finally, we combine all event stacks and estimate the following regression:

$$Y_{e,u,s,t} = \beta \, \Delta\text{Index}_{s,t} + \gamma Controls_{e,u,s,t} + \delta_{u,e} + \mu_{t,e} + \varepsilon_{e,u,s,t}, \tag{1}$$

In the above equation, each unit of observation u may represent a firm, an MSA-industry combination, or an individual enrollee, depending on the analysis. The variable Y denotes the outcome of interest for unit u in state s and year t, within a given event stack e. Unlike traditional stacked DiD designs, NCA enforcement shocks include both weakening and strengthening events with heterogeneous intensities. Therefore, our key regressor is $\Delta\text{Index}_{s,t}$, which captures both the direction and the magnitude of the shock. Specifically, $\Delta\text{Index}_{s,t}$ equals the enforceability change (normalized by 600) if the state is treated by t, and zero otherwise. For our treatment group, the average index change is 0.125 (i.e.,

$75/600$) for strengthening events and -0.104 (i.e., $-60/600$) for weakening events. As a robustness check, we also include an alternative regressor Affected$_{s,t}$ which only indicates the direction of the shock: it equals 1 for the strengthening treatment group after the event year, -1 for the weakening treatment group, and zero otherwise. Finally, we include granular stack-unit fixed effects $\delta_{u,e}$ to account for unobserved time-invariant heterogeneity at the unit level, and stack-year fixed effects $\mu_{t,e}$ for broad time-series variations. Standard errors are clustered at the state-stack level to account for correlations within states.

3.4 Summary Statistics

Our empirical findings first reveal how employers adjust their health insurance coverage in response to NCA enforcement shocks. We then demonstrate that these adjustments have significant downstream effects on both employee insurance enrollment and their utilization of health services. Accordingly, our analysis examines outcomes across varying levels of observation: (1) *firm-level* health insurance premiums; (2) the likelihood of offering HDHPs and the proportion of HDHPs within each *MSA-industry unit*; and (3) *individual-level* health insurance plan attributes as well as patterns in outpatient and inpatient healthcare provider visits. Table 1 summarizes the main variables in each stacked sample, respectively. In Panel A, each employer-sponsored plan costs, on average, more than $6,000 per participant in nominal dollars. In Panel B, 85% of MSA-industry combinations offer at least one HDHP in a given year, with HDHPs representing about 26% of the insurance menu. In Panel C, a typical inpatient visit requires an average total payment of $24,899, with the majority being reimbursed ($23,100). Finally, the average enrollee in our sample has a 7.7% chance of enrolling in an HDHP in a given year, with typical deductible amounts set at $1,035 for individual coverage and $1,972 for family coverage.

We can preview our main results using two simple comparisons of means in Figures 1 and 2. In both figures, each year we first sort all states into high vs. low NCA enforcement groups by the median. In Figure 1, we calculate the average premium of employer-

sponsored plans in both groups. Note that we have adjusted for inflation by converting the nominal values to real dollars in 2013. Therefore, an upward-sloping curve implies that healthcare costs for employers, on a per-worker basis, are rising faster than overall inflation. However, firms in the high-enforcement states have been able to better control costs by paying significantly lower premiums compared to their counterparts in the low-enforcement group. The premium gap between these two groups further widens over our sample period. The low-enforcement group paid an average premium of $5,540 in 2013 and $6,078 in 2020, representing a 9.7% increase, whereas the high-enforcement group observed a 5.2% increase from $5,178 to $5,448. This evidence suggests that employers in states with stronger NCA enforcement offer cheaper health insurance plans, supporting the retention costs perspective.

We argue that a key cost-saving strategy for employers is to offer HDHPs, which exhibit heterogeneous popularity across different areas. Figure 2 follows a similar approach as Figure 1, but it calculates the average probability of enrolling in HDHPs at the enrollee level. Consistent with national trends, HDHP utilization increases substantially in our sample. In 2013, both groups had an HDHP enrollment probability below 2%. By the end of the sample, the high enforcement group experienced nearly a tenfold increase to roughly 20%, while the low enforcement group reached only 14.4%.

4 Results

4.1 Supply Responses

We begin by examining how firms react to changes in labor mobility restrictions, as reflected in their employer-sponsored health benefits. Because we cannot directly observe HDHP offerings at the firm level, we infer their presence from plan costs, given that HDHP premiums are generally lower than those of traditional plans. Our first analysis thus investigates how firms adjust their health insurance expenditures through changes in premiums.

Table 2 presents the stacked DiD estimates for the effect of NCAs on employer-sponsored plan premiums at the firm level. The premium information is derived from Form 5500 (see Section 3.1 for more details). Column (1) uses the continuous variable ΔIndex as the key regressor, and column (2) uses the directional indicator (Affected).

The coefficient on ΔIndex in column (1) of Table 2 is around -0.312, which implies that a typical strengthening shock (around a 0.125 normalized increase in the index) reduces average premiums by roughly 4%. This magnitude closely matches the coefficient estimate in column (2), which suggests that after a state strengthens NCA enforceability, insurance premiums offered by the treated firms drop by about 4.1% relative to the control group. These estimates are economically meaningful: the average annual premium per worker in our sample is around \$6,040, so a 4% reduction represents about \$240 lower expenditure per insured employee per year. Overall, we document that an increase in NCA enforceability leads to a significant decrease in the premiums of health plans that employers provide. We interpret this result as supporting the retention incentive of health insurance coverage: when firms obtain an alternative way to hold onto employees through legal measures, they feel less pressure to spend generously on wellness benefits to prevent turnover.

When firms offer multiple health insurance plans on the menu, the inclusion of a low-cost plan with limited coverage may not directly impact employees' health benefits, as employees have the freedom to switch to the more comprehensive plan on the menu. However, if employees have only one option, they have to take this less generous offering. In our sample, about 57% of the firms offer a single option, making enrollment choices more sensitive to changes in the plan's characteristics. Columns (3) and (4) of Table 2 restrict the sample to be the firms that offer only one health plan option, and we observe slightly larger percentage declines. For these firms, a typical strengthening shock is associated with a 4.6%–4.8% decline in the insurance premium. There are two potential explanations for these larger responses among the single-option group. First, they may be ex-ante more financially constrained, making them sensitive to any labor cost reductions.

Second, as all employees have only one default option in their group plans, switching to cheaper plans becomes more effective in reducing aggregate costs at the firm level.

Motivated by Figure 2, we argue that a specific healthcare cost-reduction strategy for employers is switching to HDHPs. Regardless of whether the firm is fully insured or self-funded, high-deductible plans can save firm expenditures, at least in the short term, either through lower premiums or by shifting a larger portion of the reimbursement burden to employees. Unfortunately, Form 5500 only includes broad indicators of insurance types, such as HMO versus PPO, and does not provide the detailed plan characteristics needed to identify HDHPs. As an alternative, we examine how the set of health plans offered in the market shifts by aggregating the insurance options in each MSA-industry combination using the MarketScan data.

Table 3 reports coefficient estimates on the probability of at least one HDHP being offered and on the fraction of HDHPs among all available plans at the MSA-industry combination level. Consistent with our hypothesis, stronger NCA enforceability significantly increases the prevalence of high-deductible plans in the menu of options. In column (1), the coefficient on ΔIndex is 0.241, which is statistically significant at the 1% level. For a typical enforceability increase, the likelihood that an HDHP is present in the affected local menu rises by about 3%. Similarly, the coefficient of 0.090 in column (3) suggests that the proportion of plan offerings that are high-deductible increases by roughly 1.1% for an average shock. We document consistent evidence using the directional regressors.

Given the changes in employers' healthcare coverage strategies, we expect to observe a growing adoption of HDHPs among employees in treated states. Table 4 examines the impacts on five enrollment outcomes at the individual level: an indicator of enrolling in an HDHP, the deductible amounts for individual and for family coverage (in nominal dollars), and the logarithm of these deductibles. The results indicate a clear shift toward higher-deductible plans among employees. In column (1), the coefficient 0.399 implies that a typical weakening shock in our sample translates to roughly a 4% decrease in the

probability of HDHP adoption. Given that the average baseline HDHP enrollment rate in our sample is about 7.7%, this magnitude represents more than a 50% relative drop from the mean, consistent with the substantial divergence in Figure 2. Overall, we interpret this result as indicating that relaxing legal constraints on job turnover leads to fewer employees enrolling in HDHPs.

Consistent with the increased adoption of HDHPs, we observe significant increases in the deductibles of the plans chosen by employees. Columns (2) and (3) indicate that if states switch from zero to full NCA enforcement, individual deductibles increase by approximately $1,167 (statistically significant at 5%) and family deductibles by roughly $2,064 (statistically significant at 1%). Therefore, a typical strengthening shock implies roughly a $146 ($258) higher deductible for affected individuals (families). These magnitudes are consistent with the effects on logarithms in columns (4) and (5): a typical enforceability strengthening raises the affected individual's (family's) deductible by about 14.5% (13.3%), implying a roughly $150 ($263) increase from the sample mean of $1,035 ($1,972).

We conclude the section by validating the parallel trend assumptions using the following specification.

$$Y_{e,u,s,t} = \sum_{k \neq -1}^{k} \beta_k \cdot D_{s,t}^{k} + \gamma Controls_{e,u,s,t} + \delta_{u,e} + \mu_{t,e} + \varepsilon_{e,u,s,t}, \tag{2}$$

where $Y_{e,u,s,t}$ denotes the outcome for unit u in state s at year t for stack e, $D_{s,t}^{k}$ indicates the relative event time dummies around the NCA enforceability change (with $k = -1$ as the reference year). The other variables are defined in the same way as Equation (1).

Figures 3 and 4 dynamically illustrate the evolution of employer-sponsored health plan premiums and HDHP prevalence around the timing of NCA enforceability changes. Figure 3 demonstrates premium responses: Panel (a) covers the full sample of firms, while Panel (b) focuses on employers offering only a single health insurance plan option. Both

panels exhibit no systematic pre-treatment trends, validating the parallel trends assumption. After the enforcement event, premiums decrease significantly, particularly among single-option employers, suggesting that these firms adjust more aggressively when legal retention mechanisms are strengthened.

Figure 4 complements these findings by displaying the dynamic patterns of HDHP offerings and enrollment at the MSA-industry level. Panel (a) illustrates changes in the availability of HDHPs, and Panel (b) for shifts in enrollee HDHP enrollment rates. Again, the absence of clear pre-treatment trends in both panels supports our DiD identification strategy. Following the enforcement event, there is a notable rise in both HDHP offerings and enrollment, which reinforces our argument that enhanced NCA enforceability motivates firms to adopt cost-saving measures through increased HDHP adoption.

4.2 Healthcare Utilization

The shift toward higher-deductible plans in treated states has downstream implications for how affected employees utilize healthcare services. As HDHPs generally require enrollees to pay more out-of-pocket for initial healthcare expenses, the literature suggests that they lead to reduced medical expenditure, even on high-value services (e.g., Brot-Goldberg et al. 2017). We argue that such reductions in necessary care expose employees to significant medical risks. This exposure, in turn, can undermine long-term human capital accumulation and may also counteract cost-saving efforts if insurers increase premiums in response to higher reimbursement costs. Given that Section 4.1 suggests that talent retention is the primary incentive for employer-sponsored plans, affected firms may neglect or undervalue the long-term human capital benefits of insurance coverage. In this section, we explore how these shifts in HDHPs influence the utilization patterns of various outpatient and inpatient healthcare services.

Outpatient To start, Table 5 investigates outpatient visits with relatively low out-of-pocket costs. The rationale is that low-cost medical services are often fully paid out-of-pocket by HDHP enrollees, as these expenses rarely reach the deductible threshold and thus are more likely directly borne by patients. In contrast, higher-cost medical services generally involve cost-sharing arrangements, reducing immediate financial responsibility for enrollees. Moreover, services below this cost cutoff are likely more discretionary or postponable, leaving them subject to employees' demand decisions.

Columns (1) and (2) examine the frequency of low-cost visits with a threshold of out-of-pocket costs below $500 per visit. These columns show that affected enrollees significantly reduce their use of low-cost medical services after NCA enforceability increases, with coefficients of -0.481 on the logarithm of total visits and -8.183 on the number of visits. Using the latter coefficient, we estimate that a typical strengthening shock reduces the number of low-cost outpatient visits by about one per affected employee.

In the remaining columns of Table 5, we explore alternative categories of services based on the actual place of service and Current Procedural Terminology (CPT) codes, alleviating concerns that the out-of-pocket cost cutoff may be arbitrary.[7] First, we focus on office visits in columns (3) and (4) and document consistent results. Column (3) implies that, on average, affected employees reduce more than 0.6 physician office visits per year following their state's strengthened NCA enforcement. We acknowledge that affected enrollees may have over-utilized low-cost services before the shock and subsequently avoided wasteful care. However, following Brot-Goldberg et al. (2017), we document that a valuable category of services, i.e. preventive care, also becomes significantly less utilized among treated employees. Despite most employer-sponsored plans requiring zero out-of-pocket payments before reaching the deductible, HDHPs have been documented to deter preventive care visits, possibly due to behavioral biases in understanding service prices (Baicker et al. 2015)

[7]CPT (Current Procedural Terminology) codes, developed and maintained by the American Medical Association, uniquely identify medical procedures and services performed by healthcare providers, for the purposes of billing, utilization tracking, and healthcare analysis.

or the bundling of preventive services with other non-free services.

We argue that the reduced low-cost visits among the treatment group are driven by the adoption of HDHPs. We further validate our argument by examining how healthcare utilization varies across calendar quarters. Because most insurance deductibles reset in January, the effective "spot price" for medical services increases sharply at the beginning of each year under high-deductible health plans (HDHPs), leading to particularly low healthcare utilization in the first quarter (Aron-Dine et al. 2015). As enrollees gradually meet their deductibles throughout the year, the effective out-of-pocket cost decreases, causing healthcare utilization under HDHPs to converge towards traditional plans by year-end. Consistent with this pattern, Table 6 shows that the reduction in low-cost visits is largest in the first quarter (approximately -0.37, statistically significant at the 5% level), decreases in magnitude and significance through subsequent quarters, and becomes statistically insignificant by the fourth quarter. The net annual effect, however, remains a decline in overall utilization. The dynamic pattern indicates that the observed reduction in healthcare utilization primarily results from employees' responses to the higher initial out-of-pocket costs associated with HDHPs, rather than reflecting an overall decrease in healthcare demand.

What are the consequences of reduced routine and preventive care? We argue that affected employees face heightened medical risks and conditional costs due to these behavioral changes. Table 7 shows that the decline in outpatient utilization is not uniform across all service categories. Instead, affected employees appear to increase their high-cost visits. Specifically, we examine the treatment effects on the logarithm of total annual visits for outpatient services with out-of-pocket payments exceeding progressively higher thresholds, from \$500 to \$2,000. In contrast to the results in Table 5, all coefficients in Table 7 are positive and statistically significant, indicating the opposite direction of treatment effect. As we move from the \$500 threshold to \$2,000, the coefficient magnitudes decline from 0.065 to 0.026, potentially reflecting reduced variation with a smaller share

of visits exceeding higher out-of-pocket thresholds. The treatment effects with intermediate cutoffs tend to exhibit the strongest statistical significance. Overall, these findings suggest that while low-cost outpatient visits by affected enrollees decline, there is a corresponding increase in costly outpatient visits after states strengthen their NCA enforcement. This comparison supports our argument about heightened medical risk exposure: employees skip or defer low-cost preventive or early-stage care, only to require more expensive procedures or emergency interventions later on.

Inpatient We also explore the extreme consequences of medical shocks through hospitalizations. In our sample, each inpatient visit is assigned a Diagnosis-Related Group (DRG) code based on the patient's condition and severity. Each DRG code is then associated with the national average length of stay (LOS) and a DRG weight, which measures the relative resource intensity and costliness of a hospital admission compared to a standard baseline. In short, a weight of 1 represents the average situation, and higher values imply additional complexity and expenditure. Following our previous strategy in Table 7, we split inpatient service utilization by severity in Table 8. For example, in Panel A we count each enrollee's total annual LOS for hospitalizations corresponding to conditions (based on DRG codes) that typically require short stays (one week or less), extended stays (more than one week), and prolonged stays (more than two weeks). We then investigate the logarithm of total inpatient days for admissions falling into each category and document that, while treatment effects for shorter stays are insignificant, the coefficient on ΔIndex for prolonged stays is 0.029, marginally significant at the 10% level.

Similarly, Panel B of Table 8 categorizes admission severity using DRG weights. We observe significantly positive treatment effects for the highest severity categories. Specifically, for admissions classified as intensive (DRG weight > 6), the estimated coefficient on ΔIndex is 0.035, which is statistically significant at the 10% level; for admissions classified as extreme (DRG weight > 7), the corresponding coefficient is also 0.035, being statisti-

cally significant at the 5% level. Overall, this pattern is consistent with our outpatient-visit results, indicating a shift in the distribution of hospitalizations toward more severe and presumably costlier cases among affected enrollees following a state's increased enforcement of NCAs. These extended inpatient visits are particularly concerning for the long-term productivity of enrollees.

Medical Cost Due to data limitations, we lack employer identity information to directly quantify how affected employees' exposure to severe medical events constrains firm-level labor productivity. Instead, we argue that the documented shifts in inpatient visit severity may generate increased healthcare expenditures, potentially offsetting the long-term cost-reduction benefits when firms switch to HDHP plans. To demonstrate this, Table 9 examines the average cost of inpatient care at the aggregate MSA-industry level. For each inpatient visit, we compute the price ratio, defined as total payments normalized by the DRG weight, to account for underlying complexity. We then calculate the average price ratio, as well as total payments and reimbursement from payers, across all annual visits in each MSA-industry combination.

Column (1) documents an insignificant increase in the normalized price ratio, suggesting that providers in the treatment group do not adjust their pricing strategies for given patient conditions. However, we document a substantial increase in the average total payments (0.913 in column 2) and an even larger rise in insurance reimbursements (0.963 in column 3), indicating that most of the total payment is covered by reimbursements. These estimates imply that a typical strengthening event raises the average cost per hospitalization by approximately 11% and reimbursements by more than 12%. Given the null effect on price ratios, we attribute these rising costs to compositional shifts: realized admissions in the treated states tend to be more complex cases requiring costlier interventions. Table 9 suggests that after switching to HDHPs, employers should be attentive to their employees' responses in healthcare utilization, even if they adopt a cost-centered view of insurance

expenditure. Rising reimbursements directly erode cost savings for self-funded employers and may expose fully insured employers to increased premiums in the future.

5 Conclusion

Our study sheds light on firms' strategic motivations for offering employer-sponsored health insurance by examining their responses to changes in labor mobility restrictions. When legal constraints on employee mobility become more enforceable, the majority of firms adjust their health insurance strategies, increasingly adopting High-Deductible Health Plans (HDHPs) to reduce short-term costs. We find that this shift leads employees to reduce low-cost preventive healthcare services, consequently resulting in greater use of high-cost, severe medical interventions over time. The general patterns consistently support the retention cost hypothesis of health benefits provision. Future research could explore variations across industry types or employee skill levels and examine employer responses to ongoing regulatory developments in labor mobility.

Our findings have implications for theory and practice. Our findings suggest that the classic economic model where fringe benefits are just another form of compensation holds more weight than theories. The findings also imply that when considering policies that reduce labor mobility, one should account not only for direct wage effects but also for likely reductions in non-wage benefits. For corporate decision-makers, our results serve as a caution. Cutting health benefits when possible might improve short-term financial metrics, but it can lead to a less healthy workforce. In an era where human capital and talent are often touted as a company's greatest asset, systematically under-investing in employee health could undermine that asset. Ultimately, our study highlights the broader trade-offs firms face between cost efficiency and workforce well-being, emphasizing the need for public attention and corporate policies that balance short-term financial gains with long-term sustainability in employee health and productivity.

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Figure 1: Average Premiums of Employer-Sponsored Plans from 2013 to 2020, by Local NCA Enforcement

This figure plots the time series of average premiums for employer-sponsored plans in states with low and high NCA enforcement. In each year, we sort all states into two groups based on whether their NCA enforceability falls below (low) or above (high) the median. We then calculate the average premium for all sample firms in each group-year, along with the 95% confidence interval. All premiums are expressed in 2013 real dollars to adjust for inflation.

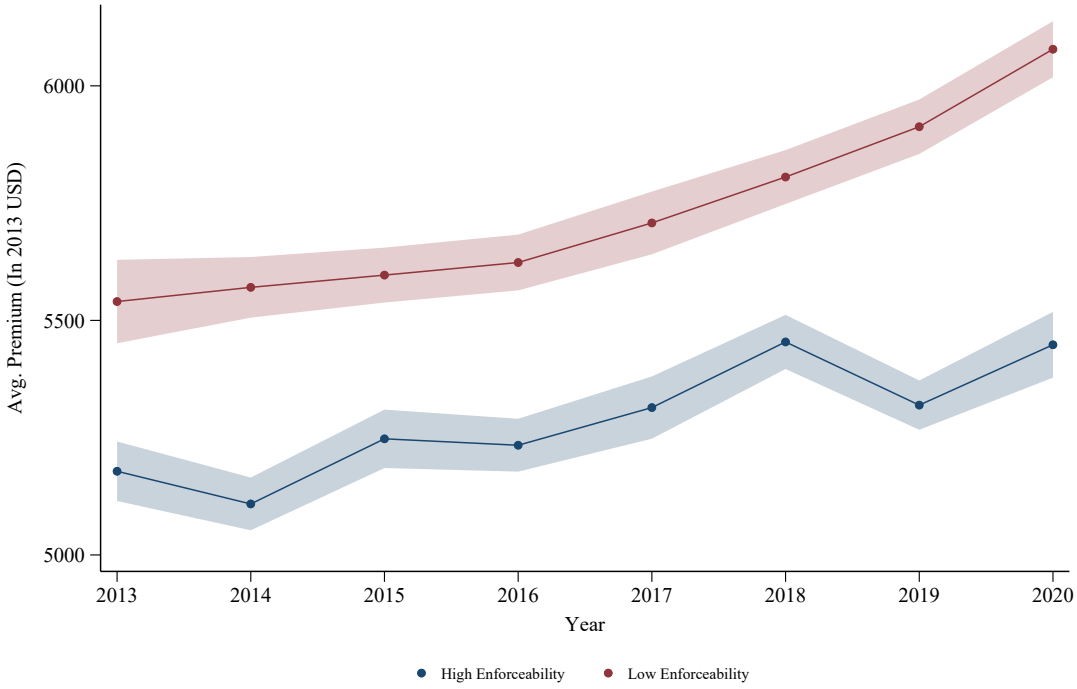


Figure 2: Probability of Employees Enrolling in High Deductible Health Plans (HDHPs) from 2013 to 2020, by Local NCA Enforcement

This figure plots the time series of probability of employees enrolling in HDHPs in states with low and high NCA enforcement. In each year, we sort all states into two groups based on whether their NCA enforceability falls below (low) or above (high) the median. We then calculate the average chance of all sample enrollees in each group-year, along with the 95% confidence interval.

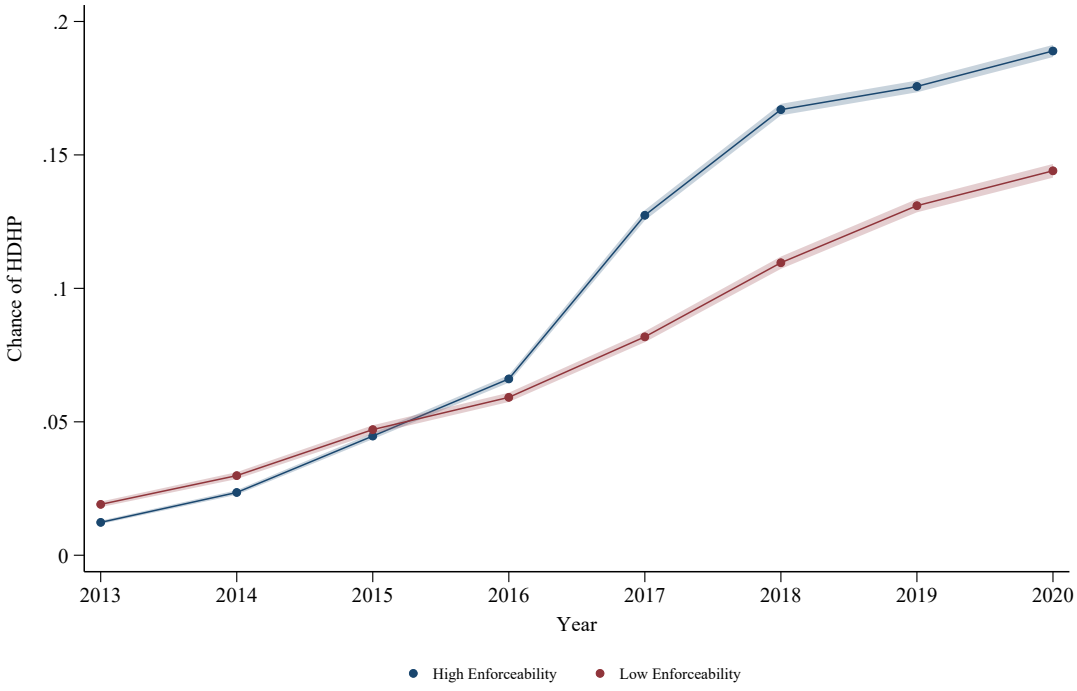
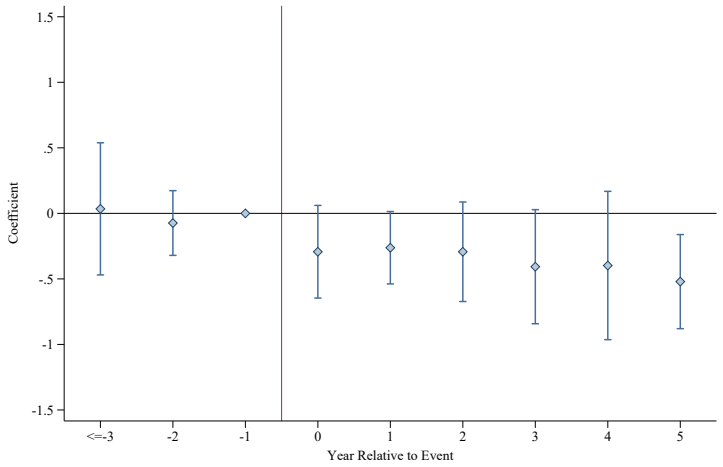
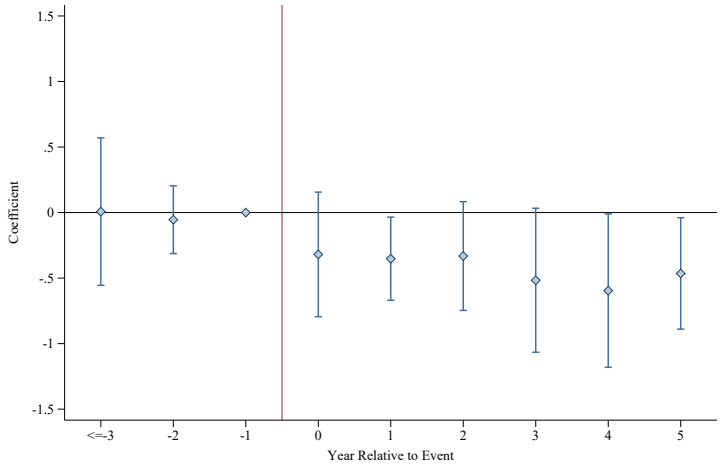


Figure 3: Change in Employers' Insurance Premium Relative to NCA Enforceability Changes

This figure illustrates the change in employer health insurance premiums relative to shifts in NCA enforceability at the firm level, using specification in Equation 2. Panel (a) presents the impact on the full sample of firms, while the panel (b) focuses on firms that offer only a single health insurance option. The x-axis represents the years relative to the change in NCA enforceability, while the y-axis shows the estimated coefficient with 95% confidence intervals.



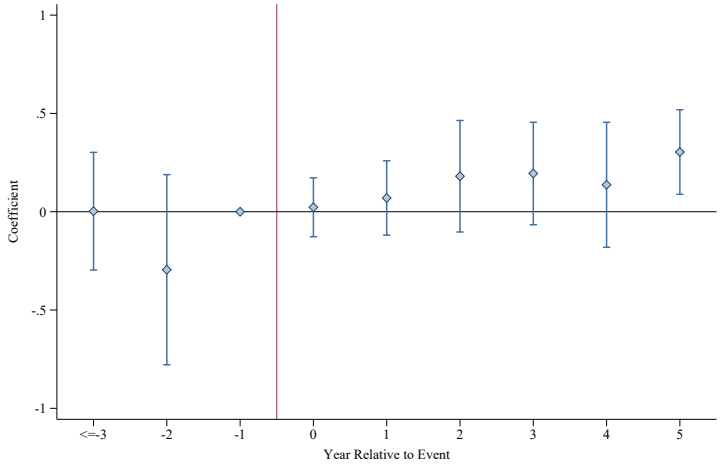
(a) Full Sample



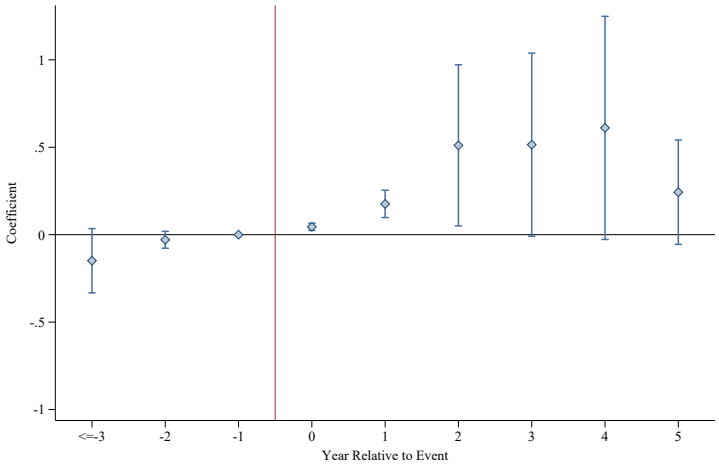
(b) Single Option

Figure 4: Chance of High Deductible Health Plans (HDHPs) Offerings and Enrollment at MSA-industry Level Relative to NCA Enforceability Changes

This figure presents the change in the availability and adoption of High-Deductible Health Plans (HDHPs) following shifts in NCA enforceability, using specification in Equation 2. Panel (a) shows the probability of at least one HDHP being offered at the MSA-industry level, while panel (b) illustrates changes in employee HDHP enrollment rates. The x-axis represents the years relative to the enforcement change, and the y-axis displays the estimated coefficients with 95% confidence intervals.



(a) HDHP Offered



(b) HDHP Enrollment

Table 1: **Summary Statistics of the Sample**

This table summarizes the main variables in the stacked-event sample at the firm level (Panel A), MSA-industry level (Panel B), and enrollee level (Panel C). In all three samples, Δ*Index* equals the enforceability change (normalized by 600) if the state is treated by a given year and zero otherwise. *Affected* equals 1 for the strengthening treatment group after the event year, -1 for the weakening treatment group, and zero otherwise. In Panel A, *Premiums* is the premium per participant for all enrollees covered by a given firm. In Panel B, *HDHP Offered* is one if at least one HDHP is present in the local MSA-industry insurance menu, and zero otherwise. *HDHP Frac* is the fraction of HDHPs among all unique products in the local menu. We also calculate average inpatient cost information for each MSA-industry combination, conditional on non-zero inpatient visits from local enrollees in a year. *Price Ratio* is defined as the average ratio of total payments to DRG weight across all inpatient visits. *TotalPay* is the average total payment (including both patient self-payments and insurer reimbursements). *Reimburse* is the average reimbursement across all inpatient visits from local enrollees. In Panel C (continued on the next page), *HDHP* is one if the employee enrolls in an HDHP during the year, and zero otherwise. *Deductible*^{Ind} and *Deductible*^{Fam} denote the deductible amounts for individual and family coverage, respectively. *Age* is the enrollee age. We calculate the total number of outpatient visits by each employee in a given year across various categories based on out-of-pocket (OOP) payment thresholds: *Low Cost* (OOP ≤ 500), *Moderate* (OOP > 500), *Substantial* (OOP > 1000), *High* (OOP > 1500), and *Very High* (OOP > 2000). Additionally, we record the total number of office visits (*Office Visit*) and preventive care visits (*Preventive*). Lastly, we calculate the total length of stays (LOS) for inpatient visits across various categories: based on the national average LOS of the same DRG, including *Short Stay* (Avg. LOS ≤ 7 days), *Extended* (Avg. LOS > 7 days), and *Prolonged* (Avg. LOS > 14 days); and based on DRG weights, including *Standard* (Weight ≤ 4), *Elevated* (Weight > 4), *High* (Weight > 5), *Intensive* (Weight > 6), and *Extreme* (Weight > 7).

	N	Mean	Std	p25	Median	p75th
Panel A: Firm Level						
Δ*Index*	163,786	-0.001	0.027	0.000	0.000	0.000
Affected	163,786	-0.010	0.253	0.000	0.000	0.000
Premiums	163,786	6040.950	3764.857	4060.755	5315.433	7088.717
Panel B: MSA-industry Level						
Δ*Index*	13,958	-0.003	0.040	0.000	0.000	0.000
Affected	13,958	-0.016	0.354	0.000	0.000	0.000
HDHP Offered	13,958	0.850	0.357	1.000	1.000	1.000
HDHP Frac	13,958	0.259	0.213	0.123	0.241	0.333
Price Ratio	3,065	18202.515	12012.398	11932.489	15730.399	21180.070
TotalPay	3,066	24898.692	23482.965	12649.140	19058.318	28648.850
Reimburse	3,066	23100.159	23444.598	10835.647	17206.845	26691.375

[*Continues on the next page.*]

	N	Mean	Std	p25	Median	p75th
Panel C: Enrollee Level						
$\triangle$*Index*	886,150	-0.004	0.030	0.000	0.000	0.000
Affected	886,150	-0.034	0.242	0.000	0.000	0.000
HDHP	886,150	0.077	0.267	0.000	0.000	0.000
Deductible^{Ind}	886,150	1035.460	760.000	500.000	875.000	1300.000
Deductible^{Fam}	886,150	1972.301	1323.165	1000.000	1700.000	2900.000
Age	886,150	40.836	7.516	35.000	41.000	47.000
Total Outpatient Visits:						
Low Cost	886,149	24.099	27.774	4.000	14.000	33.000
Moderate	886,149	0.167	0.792	0.000	0.000	0.000
Substantial	886,149	0.050	0.411	0.000	0.000	0.000
High	886,149	0.022	0.278	0.000	0.000	0.000
Very High	886,149	0.012	0.204	0.000	0.000	0.000
Office Visit	886,149	11.790	14.242	2.000	6.000	16.000
Preventive	886,149	0.455	0.604	0.000	0.000	1.000
Total Inpatient Length of Stay:						
Short Stay	886,150	0.101	0.965	0.000	0.000	0.000
Extended	886,150	0.029	0.830	0.000	0.000	0.000
Prolonged	886,150	0.006	0.445	0.000	0.000	0.000
Standard	886,150	0.116	1.122	0.000	0.000	0.000
Elevated	886,150	0.014	0.621	0.000	0.000	0.000
High	886,150	0.011	0.575	0.000	0.000	0.000
Intensive	886,150	0.005	0.394	0.000	0.000	0.000
Extreme	886,150	0.004	0.349	0.000	0.000	0.000

Table 2: **Impact of NCA Enforcement on Employer Health Plan Premiums**

This table reports the impact of NCA enforcement on employer health plan premiums using Equation (1) at the firm level. Δ*Index* equals the enforceability change (normalized by 600) if the state is treated by a given year and zero otherwise. *Affected* equals 1 for the strengthening treatment group after the event year, -1 for the weakening treatment group, and zero otherwise. The outcome variable *Log(Premiums)* is the logarithm of (one plus) the premium per participant for all enrollees covered by a given firm. Columns (1) and (2) include the full firm sample, whereas columns (3) and (4) only include the sample firms with only one insurance option in their menu. All specifications include fixed effects for each stack-firm combination and for each stack-year combination. Standard errors in parentheses are clustered at the state-stack level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	All Firms		Single Plan Firms	
	Log(Premiums)			
	(1)	(2)	(3)	(4)
Δ*Index*	-0.312*		-0.385**	
	(0.163)		(0.161)	
Affected		-0.041**		-0.046**
		(0.017)		(0.018)
Stack-Unit FE	Yes	Yes	Yes	Yes
Stack-Year FE	Yes	Yes	Yes	Yes
Sample	163,786	163,786	93,542	93,542
N	0.54	0.54	0.59	0.59

Table 3: **Impact of NCA Enforcement on Local HDHP Supply**

This table reports the impact of NCA enforcement on local HDHP supply using Equation (1) at the MSA-industry level. Δ*Index* equals the enforceability change (normalized by 600) if the state is treated by a given year and zero otherwise. *Affected* equals 1 for the strengthening treatment group after the event year, -1 for the weakening treatment group, and zero otherwise. *HDHP Offered* is one if at least one HDHP is present in the local MSA-industry insurance menu, and zero otherwise. *HDHP Frac* is the fraction of HDHPs among all unique products in the local menu. Control variables include the logarithm of (one plus) unique insurance product counts, the logarithm of (one plus) total enrollees, average enrollee age, and the fraction of female enrollees in each MSA-industry combination. All specifications include fixed effects for each stack-MSA-industry combination and for each stack-year combination. Standard errors in parentheses are clustered at the state-stack level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	HDHP Offered		HDHP Frac	
	(1)	(2)	(3)	(4)
Δ*Index*	0.241***		0.090**	
	(0.085)		(0.042)	
Affected		0.023**		0.013**
		(0.011)		(0.005)
Controls	Yes	Yes	Yes	Yes
Stack-Unit FE	Yes	Yes	Yes	Yes
Stack-Year FE	Yes	Yes	Yes	Yes
N	13,958	13,958	13,958	13,958
Adj. R^2	0.60	0.60	0.62	0.62

Table 4: **Impact of NCA Enforcement on Employee Health Plan Enrollment and Deductibles**

This table reports the impact of NCA enforcement on employee health plan enrollment and deductibles using Equation (1) at the enrollee level. Δ*Index* equals the enforceability change (normalized by 600) if the state is treated by a given year and zero otherwise. *HDHP* is one if the employee enrolls in an HDHP during the year, and zero otherwise. *Deductible*^{Ind} and *Deductible*^{Fam} denote the deductible amounts for individual and family coverage, respectively. In columns (4) and (5), we include the logarithm of (one plus) these two variables as the outcome variables. Control variables include the logarithm of (one plus) enrollee age and ten indicator variables for the enrollee's working industry. All specifications include fixed effects for each stack-enrollee combination and for each stack-year combination. Standard errors in parentheses are clustered at the state-stack level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	(1) HDHP	(2) Deductible^{Ind}	(3) Deductible^{Fam}	(4) Log(Deductible^{Ind})	(5) Log(Deductible^{Fam})
Δ*Index*	0.399**	1167.458**	2063.661***	1.162**	1.065***
	(0.174)	(506.942)	(568.884)	(0.422)	(0.306)
Controls	Yes	Yes	Yes	Yes	Yes
Stack-Unit FE	Yes	Yes	Yes	Yes	Yes
Stack-Year FE	Yes	Yes	Yes	Yes	Yes
N	886,150	886,150	886,150	886,150	886,150
Adj. R^2	0.61	0.73	0.75	0.82	0.83

Table 5: **Impact of NCA Enforcement on Low-Cost Outpatient Healthcare Utilization**

This table reports the impact of NCA enforcement on employee low-cost outpatient healthcare utilization using Equation (1) at the enrollee level. Δ*Index* equals the enforceability change (normalized by 600) if the state is treated by a given year and zero otherwise. The outcome variables are the number of outpatient visits by each enrollee in a given year (*# Visits*) and the logarithm of (one plus) it in various categories (*Log(TotalVisits)*). Columns (1) and (2) only include *Low Cost* visits with patient out-of-pocket payment no more than $500. Columns (3) and (4) only include office visits. Columns (5) and (6) only include preventive care services. Control variables include the logarithm of (one plus) enrollee age and ten indicator variables for the enrollee's working industry. All specifications include fixed effects for each stack-enrollee combination and for each stack-year combination. Standard errors in parentheses are clustered at the state-stack level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	(1)	(2)	(3)	(4)	(5)	(6)
	Log(TotalVisits)	# Visits	Log(TotalVisits)	# Visits	Log(TotalVisits)	# Visits
Categories:	Low Cost		Office Visits		Preventive	
Δ*Index*	-0.481*	-8.183*	-0.365**	-5.005**	-0.274**	-0.408**
	(0.244)	(4.528)	(0.161)	(1.927)	(0.100)	(0.158)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Stack-Unit FE	Yes	Yes	Yes	Yes	Yes	Yes
Stack-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	886,117	886,150	886,135	886,150	886,145	886,150
Adj. R^2	0.49	0.45	0.51	0.49	0.36	0.37

Table 6: **Heterogeneous Impacts on Low-Cost Outpatient Healthcare Utilization By Quarters**

This table reports the impact of NCA enforcement on employee low-cost outpatient healthcare utilization in each quarter using Equation (1) at the enrollee level. Δ*Index* equals the enforceability change (normalized by 600) if the state is treated by a given year and zero otherwise. The outcome variables are the logarithms of (one plus) the number of *Low Cost* outpatient visits by each enrollee in a given quarter of the year from Q1 to Q4 in columns (1) to (4), respectively. Control variables include the logarithm of (one plus) enrollee age and ten indicator variables for the enrollee's working industry. All specifications include fixed effects for each stack-enrollee combination and for each stack-year combination. Standard errors in parentheses are clustered at the state-stack level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	(1)	(2)	(3)	(4)
	Low Cost: Log(TotalVisits)			
By Quarter	Q1	Q2	Q3	Q4
Δ*Index*	-0.368**	-0.312*	-0.196*	-0.273
	(0.144)	(0.178)	(0.110)	(0.168)
Controls	Yes	Yes	Yes	Yes
Stack-Unit FE	Yes	Yes	Yes	Yes
Stack-Year FE	Yes	Yes	Yes	Yes
N	886,126	886,120	886,129	886,119
Adj. R^2	0.32	0.31	0.31	0.33

Table 7: **Impact of NCA Enforcement on Costly Outpatient Healthcare Utilization**

This table reports the impact of NCA enforcement on employee costly outpatient healthcare utilization using Equation (1) at the enrollee level. Δ*Index* equals the enforceability change (normalized by 600) if the state is treated by a given year and zero otherwise. The outcome variables are the logarithms of (one plus) the number of outpatient visits by each enrollee in a given year in various cost categories. For example, column (1) includes the *Moderate* visits with patient out-of-pocket payment greater than $500. Other outcome variables are defined similarly. Control variables include the logarithm of (one plus) enrollee age and ten indicator variables for the enrollee's working industry. All specifications include fixed effects for each stack-enrollee combination and for each stack-year combination. Standard errors in parentheses are clustered at the state-stack level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	(1)	(2)	(3)	(4)
	Log(TotalVisits)			
By Total OOP:	Moderate (>500)	Substantial (>1000)	High (>1500)	Very High (>2000)
Δ*Index*	0.065*	0.051***	0.041***	0.026**
	(0.036)	(0.012)	(0.014)	(0.012)
Controls	Yes	Yes	Yes	Yes
Stack-Unit FE	Yes	Yes	Yes	Yes
Stack-Year FE	Yes	Yes	Yes	Yes
N	886,137	886,147	886,148	886,149
Adj. R^2	0.13	0.10	0.08	0.07

Table 8: **Impact of NCA Enforcement on Inpatient Utilization by Severity**

This table reports the impact of NCA enforcement on employee inpatient healthcare utilization using Equation (1) at the enrollee level. Δ*Index* equals the enforceability change (normalized by 600) if the state is treated by a given year and zero otherwise. The outcome variables are the logarithms of (one plus) the inpatient length of stay (*TotalLOS*) by each enrollee in a given year in various severity categories. In Panel A, we define severity based on national average length of stay of the visit's DRG. For example, column (1) includes the *Short Stay* visits with similarly medical situations on average requiring no more than 7 days of hospitalization nationwide. In Panel B, we define severity based on the visit's DRG weight. For example, column (1) includes the *Standard* visits with similarly medical situations on average requiring no more than 400% of hospitalization resource and costs relative to the nation average. Other outcome variables are defined similarly. Control variables include the logarithm of (one plus) enrollee age and ten indicator variables for the enrollee's working industry. All specifications include fixed effects for each stack-enrollee combination and for each stack-year combination. Standard errors in parentheses are clustered at the state-stack level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Panel A: Severity By Average Length of Stay

	(1)	(2)	(3)
		Log(TotalLOS)	
By Avg. LOS:	Short Stay (≤ 7 days)	Extended (> 7 days)	Prolonged (> 14 days)
Δ*Index*	-0.037	0.027	0.029*
	(-0.569)	(0.628)	(1.782)
Controls	Yes	Yes	Yes
Stack-Unit FE	Yes	Yes	Yes
Stack-Year FE	Yes	Yes	Yes
N	886,150	886,150	886,150
Adj. R^2	0.05	0.03	0.00

Panel B: Severity By DRG Weight

	(1)	(2)	(3)	(4)	(5)
			Log(TotalLOS)		
By DRG Weight:	Standard (≤ 4)	Elevated (> 4)	High (> 5)	Intensive (> 6)	Extreme (> 7)
Δ*Index*	-0.042	0.032	0.042	0.035*	0.035**
	(-0.504)	(1.063)	(1.406)	(1.883)	(2.323)
Controls	Yes	Yes	Yes	Yes	Yes
Stack-Unit FE	Yes	Yes	Yes	Yes	Yes
Stack-Year FE	Yes	Yes	Yes	Yes	Yes
N	886,150	886,150	886,150	886,150	886,150
Adj. R^2	0.07	0.01	0.01	0.00	0.00

Table 9: **Impact of NCA Enforcement on Local Inpatient Costs**

This table reports the impact of NCA enforcement on local inpatient costs using Equation (1) at the MSA-industry level. Δ*Index* equals the enforceability change (normalized by 600) if the state is treated by a given year and zero otherwise. We only include the sample years where there exist at least one local enrollee visiting hospitals for inpatient services in this year. *Price Ratio* is defined as the average ratio of total payments to DRG weight across all inpatient visits. *TotalPay* is the average total payment (including both patient self-payments and insurer reimbursements). *Reimburse* is the average reimbursement across all inpatient visits from local enrollees. The outcome variables are the logarithm of (one plus) of these variables. Control variables include the logarithm of (one plus) unique insurance product counts, the logarithm of (one plus) total enrollees, average enrollee age, and the fraction of female enrollees in each MSA-industry combination. All specifications include fixed effects for each stack-MSA-industry combination and for each stack-year combination. Standard errors in parentheses are clustered at the state-stack level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	(1) Log(Price Ratio)	(2) Log(TotalPay)	(3) Log(Reimburse)
Δ*Index*	0.332	0.913***	0.963***
	(0.588)	(6.822)	(6.803)
Controls	Yes	Yes	Yes
Stack-Unit FE	Yes	Yes	Yes
Stack-Year FE	Yes	Yes	Yes
N	3,065	3,066	3,066
Adj. R^2	0.40	0.32	0.31

Internet Appendix

A Form 5500 Data

A.1 Overview

The Employee Retirement Income Security Act ("ERISA") and the Internal Revenue Code ("Code") establish disclosure requirements for the private-sector employee benefit plans. The Department of Labor ("DOL"), the Internal Revenue Service, and the Pension Benefit Guaranty Corporation jointly developed the Form 5500 series in 1975 to allow private firms that sponsor benefit plans for their employees to report and satisfy ERISA and Code requirements. Most Form 5500s are filed for employee pension plans. Welfare plans with certain size and characteristics are exempt from reporting. Exceptions include plans with fewer than 100 participants, plans for highly compensated employees only, government plans, church plans, and overseas plans that serve mainly nonresident aliens.

We retrieve and download all available Form 5500 welfare plan filings data using the EFAST2 system of the DOL. To clean up the data, we first drop all retirement plans, direct filing entities, voluntary filings with fewer than 100 participants, and duplicate filings. We keep plans that indicate they are for health benefits, and therefore exclude stand-alone welfare plans for other non-health benefits such as dental, life insurance, and long-term disability. We aggregate plan level information to firm level using Employer Identification Numbers ("EIN") reported in Form 5500. I then merge the Form 5500 data to Compustat universe using EIN as well as name match.

A.2 Imputation of Variables

How the plan is funded – whether fully insured, self-insured, or a mix of the two (mixed insured) – is not reported and must be imputed using available information. We follow the algorithm created by the Department of Labor and described in Form 5500 Group Health Plan Research File User Guide ("User Guide") to sort plans into fully, mixed or self-insure. Generally speaking, if the per capita premium amount reported is below \$1,800[8] or the filing indicates that the insurance policy could be for stop-loss coverage or payments to a third party administrator (TPA), and if the plan is funded through trust or general assets or

[8]This is used in the User Guide, I also use 0.35 multiplied by the annual average single premium for robustness.

reports benefit payments, then it will be treated as self-insured. Mixed insure is defined as plans that do not meet the requirements for self-insure; the number of individuals covered under insurance contracts as reported on Schedule A is less than half of the total number of participants as of the end of the plan year; the filing indicates that the plan is funded through a trust or general assets of the sponsor; or the filing has an attached Schedule H or I that indicates benefit payments. Fully insure is defined as plans that do not satisfy the above criteria. For firm-level funding status, if all plans of a firm are fully insured, then the firm is labeled as a fully insured firm; if all plans are self-insured, then the firm is self-insured; otherwise, the firm is mix insured.

For total premium, as suggested by the User Guide, the maximum of the values in the following items is used as the premium for that contract. Part I, 2(a), total amount of commissions paid; Part I, 2(b), total amount of fees paid; Part II, 6(b), premiums paid to carrier; Part III, 9(a)(4), earned premium; Part III, 9(b)(3), incurred claims; Part III, 9(b)(4), claims charged; and Part III, 10(a), total premiums or subscription charges paid to carrier. For total number of participants, we use the number of individuals covered under insurance contracts from Schedule A.