Avoiding the Premium on the Premium? Self-funded Health Benefit Plans and Corporate Financial Decisions

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July 21, 2025

Abstract

This paper examines how firms respond to frictions in the health insurance market by shifting toward self-funded Employer-Sponsored Insurance (ESI) arrangements in the U.S. Under self-insurance, employers avoid the high premiums charged by insurance carriers but take on greater financial risk associated with medical claims. I argue that this shift is driven by increasing insurer market concentration and obaining insurance is costly. Exploiting national health insurer mergers and acquisitions (M&A) as a source of exogenous variation in insurer markups, I find that rising local health insurance premiums significantly increase the likelihood that firms adopt self-insured plans. Compared to fully insured firms, self-insured firms are better able to preserve shareholder value amid escalating healthcare costs. In response to higher expected medical claims, self-insured firms adjust corporate financial policies by increasing precautionary cash holdings and reducing capital expenditures.

keywords: Healthcare finance, insurance premium, firm valuation, insurer acquisitions
JEL classification: G22, G31, I11, I13, J32

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1 Introduction

Does employer-sponsored health insurance (ESI) cost matter for firm value? Most of the existing research suggests that the answer is yes. Increases in a firm's health insurance expenses reduce internal cash reserves, as firms are required to make larger payments to insurance providers. This financial pressure can constrain firms' ability to invest, hire, or expand operations, ultimately exerting a negative impact on firm value. Lara et al. (2022) estimate that a 12% reduction in health insurance costs leads to an average increase of 32% in corporate profits among Fortune 500 firms. Similarly, Tong (2024) finds a significant increase in corporate investment after the implementation of regulations that lower health insurance premiums. Moreover, the rising burden of health insurance costs may prompt firms to pass those costs on to workers in the form of lower wages or reduced employment levels (Gruber 1994; Katherine and Chandra 2005; Baicker and Chandra 2006; Arnold and Whaley 2020; Brot-Goldberg et al. 2024). Such cost-shifting can diminish firm-specific human capital and reduce productivity, further weakening a firm's long-term growth opportunities. I argue that one missing component in these discussions is the firms that self-fund their employer-sponsored health benefit plans. Rather than acting as passive price takers and absorbing higher ESI costs that may eventually affect firm operations, managers can proactively alter their insurance arrangements to mitigate financial exposure. Under a self-insured arrangement, employers do not pay insurance premiums to health insurance companies. Instead, they use their general assets to directly cover the medical claims of their employees. While this approach exposes firms to the financial risk associated with medical expenses, self-insured plans have become increasingly popular over the past two decades. As of 2024, 63% of enrollees with employer-sponsored insurance (ESI) are covered by self-funded plans, up from 44% in 1999 (Kaiser Family Foundation 2024). In this paper, I examine how self-funded health benefit plans enable firms to preserve shareholder value in the face of insurance market friction.

In the United States, employer-sponsored health insurance (ESI) costs have risen substantially over the past two decades. In 2024, the average annual premium for family coverage reached $25,572, up from less than $6,000 in 1999. Figure 1 illustrates this upward trend in premiums, which coincides with a steady increase in the share of the population en-

rolled in self-insured ESI plans. The cumulative increase in the cost of employer-provided family health insurance has grown at more than three times the rate of workers' earnings (Kanimian and Ho 2024). While rising medical care costs account for part of this growth (for example, see Mathews 2023), health insurance companies—as financial intermediaries—play a central role in driving premium increases. In 2011, the net cost of health insurance represents 1% of U.S. GDP (Hartman et al. 2013)[1]. In equilibrium models, insurance premiums are determined through bargaining between employers and insurers, with insurers seeking to maximize profits in the negotiation process (Ho and Lee 2017). As insurance markets become more concentrated, insurers gain greater pricing power and can charge higher premiums, thereby raising ESI costs for employers in affected regions. Dafny et al. (2012) provides direct empirical support for this mechanism, documenting significant increases in large-group premiums following a major national health insurer merger.[2] In effect, firms that purchase fully insured plans are "paying a premium on the premium", as elevated insurer profit margins become embedded in the total cost of coverage.

Figure 1: Trends in Fully Insured Health Insurance Premiums and the Rising Popularity of Self-Insured Health Benefit Plans

This figure shows the average annual premium for employer-sponsored family health insurance from 1999 to 2024 (left axis). It also displays the fraction of the population covered by self-insured health benefit plans over the same period (right axis). Data are sourced from the KFF Employer Health Benefits Survey (Kaiser Family Foundation 2024).

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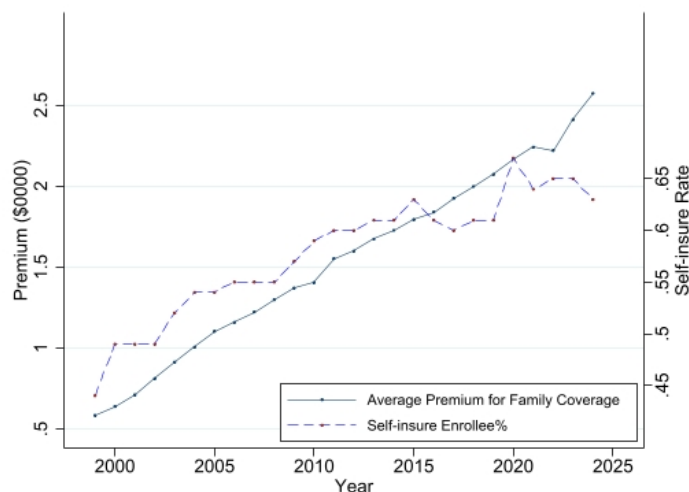
[1]The "net cost of health insurance" is the difference between premiums collected and benefits paid in a calendar year.

[2]Studies also investigate the market concentration impact on ACA marketplace premium. See Scheffler et al. (2016).

I document that firms choose to adopt self-insured health benefit plans as an optimal financial policy to avoid paying insurer profit margins and to preserve shareholder value in response to increasing employer-sponsored health insurance (ESI) cost. Modigliani and Miller (1958) showed that, in the absence of taxes and contracting frictions, corporate financing policy is irrelevant to firm value. A large body of subsequent research has demonstrated that financing frictions and factor adjustment costs can materially affect corporate investment decisions and market valuation (Jorgenson 1963; Hayashi 1982; Nance et al. 1993; Abel and Eberly 1994; Opler et al. 1999; Graham 2000; Merz and Yashiv 2007). In the context of healthcare, rising insurance premiums act as a financial friction that erodes firms' ability to invest and undermines worker health, thereby limiting long-term growth opportunities. Employers that effectively manage this friction by selecting a cost-efficient funding mechanism for their ESI and purchasing insurance optimally are engaging in prudent financial policy on behalf of shareholders. As Mayers and Smith (1982) noted, 'the purchase of insurance by firms at actuarially unfair rates would represent a negative net present value project, reducing stockholder wealth.'

Establishing a causal relationship between the net cost of health insurance and firms' decisions to self-fund their health benefit plans poses several challenges. First, the regions where firms purchase fully insured plans may have stricter state-level mandates requiring coverage for services not mandated under self-insured arrangements. These states may also impose additional financial reserve requirements to mitigate insurer insolvency risk and levy premium taxes to fund other state programs.[3] As a result, self-insured plans are more attractive in these states, coinciding with higher fully insured premiums driven by regulatory burdens. This introduces omitted variable bias, as the regulatory environment—and potentially other local factors such as healthcare provider concentration or pricing—affects both premium levels and firms' insurance funding decisions. Second, a well-documented pattern in both empirical data and industry reports is that large firms are significantly more likely to self-insure.[4] This is often attributed to economies of scale in managing administrative costs and the ability to diversify medical claim risk across a

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[3] Fully insured health plans are subject to state-level insurance mandates, whereas self-insured plans—regulated under the Employee Retirement Income Security Act (ERISA)—are exempt from all state health insurance regulations. For example, many states require fully insured plans to cover specific benefits such as fertility treatments or mental health services.

[4] As of 2024, 20% of enrollees in firms with fewer than 200 employees are covered by self-funded health plans, compared to 84% in firms with more than 1,000 employees. See Figure 2.

large pool of employees. If a local market has a high concentration of large firms, a greater share of employees will be enrolled in self-insured plans, shrinking the fully insured risk pool. This smaller, potentially higher-risk pool may lead insurers to raise fully insured premiums in response. This reverse causality introduces endogeneity and could bias any estimate of the impact of premiums on the self-insurance decision.

To address the identification challenge, I employ two empirical strategies. The first is an instrumental variables (IV) approach designed to isolate exogenous variation in insurance market concentration. Using insurer-state-level data from the NAIC Annual Reports, I construct a Bartik-style instrument that predicts state-year insurance market concentration based on the weighted average of each insurer's national market share growth—excluding the focal state—interacted with its pre-period market share in that state. The core intuition is that states with greater pre-period exposure to insurers experiencing high national growth should see larger increases in local market concentration, independent of local demand shocks. For example, between 2010 and 2016, Centene Corporation's national market share grew substantially, from 0.59% to 2.61%, and its total direct premiums written increased from $3.9 billion to $53.8 billion. In 2009, Centene held a 4.12% market share in Indiana but only 0.02% in Michigan. By 2016, Centene's market share rose to 7.43% in Indiana while remaining negligible in Michigan. Using the constructed panel of state-year changes in insurance market concentration and firm-year self-insurance decisions, I document that the net cost of health insurance premiums significantly influences firms' financing decisions regarding their health benefit plans. In particular, exogenous increases in insurer profit margins—driven by rising market concentration—lead firms to avoid the additional costs embedded in fully insured contracts. Quantitatively, a 10% increase in county-level insurance premiums (relative to the sample average) is associated with a 4.7 percentage point increase in the likelihood that a firm adopts a self-insured health benefit plan. The identifying assumption for this instrumental variable strategy is that, conditional on observables, pre-period insurer market shares are exogenous (Goldsmith-Pinkham et al. 2020). To further address potential confounding factors, I include state fixed effects to control for time-invariant local economic conditions, as well as year fixed effects to account for national trends. This specification helps mitigate concerns that differential exposure to insurer growth may reflect variation in state-level regulatory enforcement or provider network accessibility. The underlying

identification strategy assumes that, once location-specific trends are purged, the remaining variation in insurer exposure captures changes in insurer bargaining power that affect firms' health benefit funding decisions only through their impact on fully insured contract premiums.

The second empirical strategy exploits a sharp and heterogeneous increase in local market concentration in the large-group insurance segment, induced by the 2013 merger of two national insurers: Aetna Group and Coventry Health Care Inc. Both firms operated in multiple state-level insurance markets, making the merger's effects geographically widespread. Prior to the merger, Aetna held an average market share of 5.07% across 41 states, while Coventry operated in 26 states with an average market share of 4.79%. Notably, both insurers were active in 21 states, where Aetna ranked among the top five insurers in 60% (13 out of 21) of these markets, and Coventry ranked in the top five in 50% (10 out of 21). I treat the overlapping states as the "treatment" group in a quasi-experimental difference-in-differences framework. Due to the variation in pre-merger market shares across states, markets experienced different degrees of exposure to the merger. To capture this treatment intensity, I construct a simulated change in market concentration (ΔHHI), based on pre-merger shares, and use this measure as an instrument for actual changes in local market concentration. This approach allows me to examine the causal relationship between premium growth and insurer consolidation, while controlling for time-varying local economic conditions. I obtain an average treatment effect of 2.4% higher likelihood for firms located in the treatment states that self-insure.

Next, I examine whether the self-funded health benefit plan, as an optimal insurance policy, preserves shareholder value in the face of rising health insurance cost. I match the health insurance dataset to the financial dataset and construct a subsample for publicly traded firms. I use Tobin's Q, approximated by the ratio of market capitalization to book value of asset, as a measure of stockholder wealth. Under the setting of Aetna-Coventry merger, I find firms located in the treated states experience a significant drop in Tobin's Q. Consistent with previous literature, the increased market concentration exhibits a negative impact on fully insured and mixed insured firms, where both type of contracts involve insurance relationship with an insurance company. At the same time, firms that are purely self-insured before the merger completed in 2013 does not have a decline in

their market valuation.

One important feature of self-funded health benefit plan is the exposure to unexpected medical expenditure risk. A fluctuation of incurred medical bills in certain years will deplete employers liquid fund, causing significant financial depress. Many employers purchase stop-loss insurance for their self-funded health benefit plan as an effective way to mitigate the medical claim risk [5]. In a stop-loss contract, employers are responsible for the incurred medical bills up to the level of deductible specified in the stop loss contract and the stop loss insurer is responsible for the rest of the bills. To establish certain risk-transfer standards, many states set thresholds for stop loss deductible, with the goal of ensuring that employers buying this coverage retain enough risk that they remain truly self-funded. An increase in minimum deductible threshold required by the states increase the medical expenditure risk exposure for self-insured employers. During my sample period, 11 states newly adopted or increased the minimum stop loss insurance attachment point. I exploit these changes as an exogenous variation in firm medical claim risk exposure. Under a staggerred diff-in-diff framework, I document the spillover effect of increasing expected medical claim on corporate investment when employers are self-insured. Additional analysis shows that this spillover effect is related to many other financial characteristics, including the profit, labor hiring and cash holding.

I conduct several robustness checks to validate the main findings. First, the results remain consistent when including an additional, smaller insurer merger that occurred during the sample period. Second, redefining the self-insured health benefit plan variable—such as using alternative thresholds for classifying mixed-funded plans—does not materially affect the estimates. Third, a placebo test in which treatment states are randomly assigned confirms that the observed effects are not driven by chance. Across these specifications, the estimated impact of insurer market concentration on firms' self-insurance decisions remains robust.

This paper contributes to several strands of the literature. Several existing literature examines the determinants of employers' decisions regarding the funding arrangements of their health benefit plans. Much of these works focuses on the role of state mandates

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[5]75% enrollees in large group self-insured plans are covered by stop-loss insurance as of 2024 (Kaiser Family Foundation 2024).

and regulatory environments in shaping firms' decisions to self-fund employer-sponsored health insurance. These studies report mixed findings across different time periods, suggesting that the decision to adopt a particular funding mechanism is dynamic (Jensen et al. 1995, Acs et al. 1996, Marquis and Long 1999, Marquis and Long 1999, Park 2000, Eibner et al. 2011, Robinson 2023, Meiselbach et al. 2024). The existing literature also documents the role of firm size in the decision to self-insure, either as a response to state mandates (Gabel and Jensen 1989) or due to heterogeneous capacity to diversify medical expenditure risk across a larger employee base (Meiselbach and Eisenberg 2025). These findings suggest that large firms have been the primary drivers of the increasing adoption of self-funded health benefit plans. Within a principal-agent framework, Feldman (2012) characterizes the employer's self-insurance decision as a trade-off between employer moral hazard and third-party administrator (TPA) moral hazard. Dalton and Holland (2019) offers one of the first explanations from a corporate finance perspective, arguing that firms may opt against self-insurance due to limited capacity to hedge medical claim risk effectively. My paper contributes to this literature by establishing a new causal link between the risk-adjusted profit embedded in fully insured premiums and firms' decisions to shift from purchasing insurance contracts to adopting self-funded health benefit plans.

My research also contributes to a broader literature examining the corporate demand for health insurance, including the determinants of employer-sponsored health insurance premiums. Health is a critical component of human capital for firms (Mushkin 1962; Grossman 1972). Employers invest in the health of their workforce through the provision of health insurance while aiming to maximize shareholder value (Holland 2017). Deteriorations in employee health—such as from widespread influenza outbreaks (McTier et al. 2013) —have been shown to negatively impact firms' stock market performance. From a labor market perspective, profit-maximizing employers make joint decisions regarding wage compensation and health insurance during the labor market search process (Dey and Flinn 2005; Aizawa and Fang 2020). Empirically, Ouimet and Tate (2023) finds a negative relationship between employer health insurance costs and firm market valuation. Gao et al. (2022) documents that rising healthcare costs lead firms to alter their labor composition by substituting workers with information technology. As widely documented in the literature, insurance premium are determined through insurer-employer bargaining (Gaynor et al. 2015). For-profit insurance companies are able to raise premiums when

they gain additional bargaining power, thereby passing a larger share of medical care costs onto employers (Dafny 2010, Dafny et al. 2012, Dafny 2019). My research contributes to this literature by demonstrating that the choice of health benefit funding arrangement is a key element of corporate financial policy. Firms endogenously adjust this choice to preserve a target level of health insurance coverage while managing the additional costs arising from insurer market. Moreover, in light of ongoing policy discussions regarding the limitations of antitrust enforcement in the hospital sector (Brot and Klarnet 2024), my findings underscore the importance of extending similar scrutiny to the health insurance industry. The results suggest that insurer market power has real and measurable effects on firms and, more broadly, on the aggregate supply in the economy.

Finally, my research contributes to the growing literature examining the intersection of the healthcare sector and financial markets (see Lo and Thakor 2022, Lo and Thakor 2023 for a review). As of 2024, the healthcare sector accounts for approximately 18% of U.S. GDP, with Koijen et al. (2016) projecting that health care will eventually comprise 32% of GDP in the long run. Existing studies in this area primarily focus on the hospital sector and its interactions with capital markets, investigating how financial conditions influence hospital behavior and outcomes (Adelino et al. 2015, Towner 2020, Adelino et al. 2022, Cornaggia et al. 2024). A more specific strand of the literature examines the impact of private equity (PE) ownership on healthcare sector outcomes. Liu (2022) investigate how PE buyouts of hospitals affect hospital–insurer price negotiations and patient welfare. Aghamolla et al. (2024a) document broader spillover effects of PE ownership on local economic outcomes, transmitted through the hospital sector. Other studies highlight the increased profitability of PE-owned hospitals (Offodile et al. 2021) and adverse effects on patient outcomes, including elevated mortality rates in nursing homes under PE ownership (Gupta et al. 2024) and reduce hospital worker wage and employment (Gao et al. 2025). More generally, in the context of financial intermediaries and healthcare outcomes, Aghamolla et al. (2024b) show that negative credit supply shocks deteriorate the quality of hospital care. My study introduces a novel interaction between another economically significant sector—the health insurance industry—and corporate production activities as well as financial market responses. As a highly specialized form of financial intermediary, the health insurance sector plays a critical role in shaping aggregate economic output. It does so by influencing corporate investment and capital market valuation through the

channel of rising insurance premiums.

2   Institutional Background

2.1   Employer Sponsored Health Insurance and Self-funded Health Benefit Plan

In the United States, employers play a pivotal role in the private health insurance market. Employer-sponsored health insurance (ESI) refers to coverage provided by an employer, a union, or a group of employers. According to the Kaiser Family Foundation, 54% of the U.S. population was covered by employment-based insurance in 2024, making it the largest segment among all insurance company business lines, followed by Medicare (18.7%) and Medicaid (18.8%). However, this high coverage rate is accompanied by rising costs. The average annual premium for single coverage increased from $2,196 in 1999 to $8,951 in 2024. Similarly, the average annual premium for family coverage rose from $5,791 in 1999 to $25,572 in 2024. Despite these escalating costs, large employers continue to offer generous health plans to their employees. Over 98% of firms with more than 200 employees offered health benefit plans in 2024, a ratio that has remained steady since 1999.

Employers sponsoring health benefits can choose between two funding types, distinguished by who bears the financial responsibility for medical claims. Under a fully insured plan, employers purchase a health insurance policy from a state-licensed insurer, such as Blue Cross Blue Shield. In this arrangement, the insurer assumes financial risk and covers medical claims in exchange for a premium. Conversely, under a self-insured plan, employers determine what benefits to offer, pay medical claims directly from their general assets for employees and their families, exposing themselves to a certain level of financial risk, particularly for high-cost claims. Employers can also choose to mixed insure by adopting both funding arrangements at the same time.

Beyond the financial responsibility, one most significant feature that distinguishes the two types of plan is the regulatory environment. The legal framework for employee benefit

plans is established by the Employee Retirement Income Security Act (ERISA) of 1974, which makes employee benefit plans subject to exclusive federal regulation and preempts state laws that relate to employee benefit plans. However, the "saving clause" protects state laws that regulate insurance from preemption[6]. In other word, fully insured plans, as in fact an insurance contract, are subject to comprehensive regulation by state insurance department. Employers are required to purchase a fully insured contract from a state-licensed insurer and meet the rating and benefit standards for the insurance policy of insurer's compliance. By contrast, self-funded plans are exempt from state insurance regulation[7], as ERISA's "deemer clause" prohibits states from deeming a self-funded employer to be an insurer.[8] Appendix B provides a detailed discussion of the regulatory standard for fully insured plans and self-insured plans.

Almost all employers that offer self-insured health benefit plans—except for some of the largest firms—contract with third-party administrators (TPAs) to manage plan operations. TPAs, including health insurers operating under "administrative services only" (ASO) arrangements, provide a comprehensive suite of services to self-insured employers. First, TPAs assist in designing benefit packages, projecting expected program costs, and incorporating additional benefits, while ensuring compliance with applicable federal regulations and disclosure requirements. Second, TPAs provide cost management services, such as granting employers access to established provider networks and facilitating the implementation of advanced care management programs that leverage economies of scale similar to those of fully insured plans. Finally, TPAs oversee claims administration, enrollment management, and participant support services. In exchange for these services, employers pay a third-party carrier fee and remain responsible for funding the medical claims incurred by their employees. Unlike fully insured contracts, employers are not required to contract with TPAs licensed by the state, creating distinct competitive dynamics between the ASO segment and the fully insured large group segment for insurance companies. From a profitability perspective, the ASO segment generates substantially lower margins than the fully insured segment. Abraham et al. (2024) reports that between 2010 and 2022, the median profit per enrollee per year in the ASO market for the top three insurers was $40, while it was -$12.98 for all other insurers. In contrast,

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[6]ERISA § 514(b)(2)(A), codified at 29 U.S.C. § 1144(b)(2)(A).

[7]This exemption does not apply to stop loss insurance.

[8]ERISA § 514(b)(2)(B), codified at 29 U.S.C. § 1144(b)(2)(B).

the gross margin per enrollee in the fully insured group market reached \$910 as of 2023 ([Ortaliza et al. 2024](#)).

Although insurance companies are only responsible for administering self-funded health plans, their outward appearance is largely indistinguishable from fully insured plans to most observers. Plan beneficiaries receive an "insurance card" that prominently displays the name and logo of a major national insurance company. The only indication that the plan may be self-funded is a disclaimer on the back of the card stating that the insurer "... serve[s] only as claims administrator and do[es] not assume financial risk for claims," as illustrated in [Figure 3](#). When beneficiaries request "insurance information", they typically seek the name of the insurer or third-party administrator (TPA) that processes claims. If the plan operates as intended, beneficiaries have no direct financial interaction with the self-funded employers.

2.2 Insurance Market Competition

The health insurance market functions as an intermediary among healthcare providers, employers, and patients. The U.S. health insurance market is widely characterized as highly concentrated. According to the American Medical Association (AMA) 2024 report, 95% of Metropolitan Statistical Area (MSA)-level commercial markets were highly concentrated (HHI > 1800) in 2023, and 51% of markets experienced an increase in HHI since 2014.[9] The analysis of market concentration is economically meaningful, as increased competition leads to lower insurance premiums, while higher concentration enables for-profit insurers to engage in non-substantial marketing and set prices above marginal cost ([Starc 2014](#)).

[Dafny et al. (2012)](#) utilize a proprietary dataset on employer health insurance premiums to study the impact of the 1999 merger between two industry giants, Aetna and Prudential Healthcare. They find that increases in local market concentration between 1998 and 2006 led to an approximately 7% rise in premiums in the large group segment. On August 19, 2012, Aetna Group entered into a merger agreement to acquire Coventry

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[9]See www.ama-assn.org/health-care-advocacy/access-care/health-insurance-market-concentration-grows-deeper-ama-report.

Healthcare Inc. As discussed in subsequent sections, both insurers operated across multiple geographic markets, and the transaction had broad nationwide implications. The deal was valued at approximately $8.7 billion, which included $1.8 billion in Coventry's outstanding long-term debt. The primary strategic objective of the acquisition was to expand Aetna's footprint in government-sponsored health programs, including Medicare and Medicaid, while also enhancing its commercial business portfolio. Morrisey et al. (2015) documents that Aetna requested rate increases in several states following the completion of the merger.

2.3 Stop Loss Insurance

Self-funding exposes employers to several types of financial risk. These include shock claim risk—characterized by high-cost but low-frequency events such as hemophilia treatment or organ transplants; high utilization risk—involving relatively low-cost but unusually high-frequency medical service use; and timing risk—where large or frequent claims cluster within a short time period. To mitigate these risks, self-funded employers often purchase stop-loss insurance policies that provide financial protection above certain claim thresholds. However, the employer retains ultimate financial responsibility in cases where the stop-loss insurer denies a claim due to policy exclusions, coverage gaps, or conflicts between the terms of the stop-loss policy and the employer's obligations under the health benefit plan. A stop-loss insurance policy typically includes two components: the individual attachment point and the aggregate attachment point. The individual attachment point provides protection against high-cost claims incurred by a single covered individual. Once an individual's medical expenses exceed this threshold, the stop-loss insurer reimburses the employer for the excess amount. In contrast, the aggregate attachment point offers protection against the cumulative effect of numerous lower-cost claims that may not individually exceed the specific threshold. When the employer's total claim payments—excluding amounts already reimbursed under the individual stop-loss coverage—reach the aggregate attachment point, the stop-loss insurer assumes responsibility for additional costs incurred during the policy year, subject to the contract terms. See Appendix B for a numerical example. Note that the aggregate attachment point is gen-

erally set at a level significantly lower than the sum of all individual attachment points.

A stop-loss policy with sufficiently low attachment points can functionally resemble a fully insured group health insurance policy, with premiums effectively divided among TPA fees, stop-loss insurance premiums, and a fully funded claims account, but without being subject to the same regulatory oversight as fully insured health insurance. This creates opportunities for regulatory arbitrage. The concern arises from the differing underwriting standards across funding arrangements. While the small group fully insured market generally operates under modified community rating requirements[10], the self-funded market allows premiums to more directly reflect an employer's specific risk profile. As a result, self-funding with low-deductible stop-loss insurance becomes particularly attractive for small employers with younger and healthier workforces, enabling them to bypass state mandates that apply to fully insured plans, where premiums are less sensitive to the employer's risk. This dynamic exacerbates adverse selection by leaving a disproportionately high-risk population in the fully insured small group market. In response, regulators have implemented risk-transfer standards to limit such arbitrage. Many states have established minimum stop-loss attachment points to ensure that employers retain sufficient financial exposure to be classified as truly self-funded. The National Association of Insurance Commissioners (NAIC) addressed this issue by adopting the Stop Loss Insurance Model Act (#92) in 1995 and revising it in 1999, which set specific minimum attachment points and granted state commissioners the authority to adjust these thresholds for inflation:

• Specific: At least $20,000.

• Aggregate (groups of 51 or more): At least 110% of expected claims.

• Aggregate (groups of 50 or fewer): At least the greater of 120% of expected claims, $4,000 times the number of group members or $20,000.

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[10]Community rating refers to a health insurance pricing system where health insurers can't charge people within a geographic area higher premiums based on their age, gender, health status, or claims history. Modified community rating allows some degree of premium variation based on individual risk factors, but limited to age, geographic location, family composition, and tobacco use.

3 Data and Descriptive Analysis

3.1 Employer Sponsored Health Benefit Plan

To investigate the relationship between net health insurance costs, firm ESI funding decisions, I first utilize data from the *Form 5500 Annual Return/Report of Employee Benefit Plans* ("Form 5500"), maintained by the U.S. Department of Labor. Pursuant to the Employee Retirement Income Security Act (ERISA) of 1974, all private-sector employers with 100 or more participants in their welfare benefit plans are required to file Form 5500 annually to disclose plan coverage and financial information. A single firm may sponsor multiple plans, each of which is reported in a separate filing. The filings provide detailed information on plan sponsors, number of participants, types of benefits offered (e.g., health, vision, dental), funding arrangements (e.g., insurance contracts, trusts, general assets), and other plan characteristics. Firms may fund health benefit plans through direct insurance contracts (including health and stop-loss insurance), trust arrangements, or general corporate assets such as cash. Depending on the funding structure, employers must submit additional schedules attached to the main Form 5500 filing. The two most relevant forms for this analysis are Schedule A (Insurance Information) and Schedule H (Financial Information). Plans that utilize a trust to fund benefits are required to file Schedule H, while large plans without trusts must file Schedule A to report details of any insurance contracts. Small plans (fewer than 100 participants) without trusts are generally exempt from the Form 5500 filing requirement, although a small subset of these plans—typically self-insured plans with trusts—may still file. I focus my analysis on large plans, which cover approximately 60% of the employer-sponsored insurance population and account for the majority of economic activity in this market segment.

I retain plans that provide health benefits and exclude stand-alone dental, vision, and other non-medical insurance plans. The Group Health Plan Research File, maintained by the U.S. Department of Labor (DOL), classifies each Form 5500 plan filing into fully insured, self-insured, or mixed-insured categories based on funding status. The classification algorithm, described in Appendix C, relies on multiple factors, including premium per participant, third-party administrator (TPA) status, stop-loss insurance coverage, and funding sources. I merge the Group Health Plan Research File with the main Form

5500 dataset and aggregate plan-level data to the firm-year level. A firm is classified as self-insured if it sponsors at least one self-insured or mixed-insured plan during the plan year. To assess the robustness of this classification, I conduct additional analyses under alternative definitions of self-insurance. For mixed-insured firms that report enrollment separately by plan type, I calculate the fraction of employees enrolled in self-insured plans. For mixed-insured firms that do not provide disaggregated enrollment data, I impute enrollment shares using the average proportion observed among firms that report detailed data. The main results are robust to the alternative classifications. Figure 4 presents the geographic variation in the change in self-insurance adoption across the sample period. The share of ESI enrollment in self-funded plans was calculated in 2011 and 2016 among all counties, and the difference was calculated for each county. Counties were divided into four mutually exclusive categories on the basis of the calculated change in share from 2011 to 2016. The red shading indicates an increase in fraction self-insured plans during the sample period, while the blue shading represents a reduction in the popularity of self-funded plan.

To control for county-level demographic characteristics, I obtain data from the American Community Survey through IPUMS USA (Ruggles et al. 2025) for the sample period 2009–2016. I then match these demographic data to the Form 5500 employer health benefit plan filings. Table 1, Panel A, reports the summary statistics. The sample consists of 181,506 firm-year observations, with 38% of firms offering at least one self-insured health benefit plan. As shown in Panel B of Table 1, approximately 15% of firms change their funding arrangement during the study period. Notably, this proportion is consistent across counties with varying income levels.

3.2 Health Insurance Market Competition

The main analysis leverages changes in market concentration within the fully insured health insurance segment. The National Association of Insurance Commissioners (NAIC) annually publishes the top 125 insurers by total health premiums written in each state, along with their corresponding market shares based on premium volume. When individual insurance carriers are affiliated with a parent organization, the NAIC provides a

crosswalk linking each insurer to its group company. Health insurers often operate across multiple business lines, including private insurance segments (individual, small group, and large group) and public insurance programs (e.g., Medicare and Medicaid). The NAIC Supplemental Health Care Exhibit reports annual market share data by segment within the private insurance market for each state. I compile insurer-level data on total and segment-specific market shares for each continental U.S. state from 2009 to 2016.

One major empirical strategy exploited in the later part of this paper is the health insurance company merger and acquisition (M&A). To filter a comprehensive set of deals took place during the sample period, I use the SDC platinum database. I set several standards to search for appropriate deals. First, both acquirer and target companies have to be classified as health insurance carriers based on their SIC code. I also require both companies operate in more than one states before the deal is completed with at least one overlapping market. Additionally, both insurers must operate in large group segment in those overlapping markets. There are only two deals within the sample period that satisfy these criterion: Cigna Corp and Healthspring merger completed on 2012-01-31, and Aetna Inc and Coventry Health Care merger completed on 2013-05-07. Cigna and Healthspring have two overlapping markets in 2011. Aetna and Coventry have 21 overlapping markets in 2012. The Aetna-Coventry merger is used as the main empirical strategy because it is economically meaningful. Figure 5 shows the market share of Aetna Inc 1-year before and 1-year after the completion of Aetna-Coventry merger. States are categorized into four mutually exclusive rank groups. The darkest shading represents states where Aetna held the highest market share positions (#1 or #2), while the lightest shading represents states with the lowest market share rankings (#10 or higher). As dislayed in the figures, after the completion of the merger, Aetna gained additional pricing power in numerous markets.

3.3   Financial Data

The firm-level financial data are from Compustat. The sample period covers 2010–2016. The employer sponsored health benefit plan information is matched to Compustat by Employer Identification Number (EIN), excluding any companies with an SIC code that is between 4900 and 4999 or between 6000 and 6999 or above 9000. Firms with negative

asset or sales are also dropped. Table 2 presents the summary statistics of financial variable for Form 5500-Compustat matched sample. Investment, cash, debt, dividend, sale and operating cash flow are all scaled by lag total asset. See Table A1 for definition of financial characteristics using Compustat variables.

4   Empirical Strategy

4.1   Are Higher Health Insurance Premiums Associated with Greater Adoption of Self-Funded Health Benefit Plans?

In this section, I examine the relationship between the local health insurance premiums in fully insured large group segment and firms' likelihood of having a self-insured health benefit plan. I first construct the measure of county-level fully insured premium, representing the cost of health benefit plans that employers face when they choose to enter the fully insured market. For each county, I aggregate the total premium reported in the Form 5500 dataset and scale the aggregated premium by the total number of participants in those contracts. The average premium per person is \$6900 between 2010-2016, as shown in Table 1. I then estimate the OLS coefficient using the following form:

$$
\begin{aligned}
SELF_{it} = \beta_0 &+ \beta_1 log(Premium)_{ct} + \beta_2 log(\#PlanEnrollees)_{it} \\
&+ \beta_3 X_{ct-1} + \tau_t + \delta_i + \gamma_s + \epsilon_{it}
\end{aligned}
\tag{1}
$$

In this specification, I model a firm's decision to self-insure as a function of the local fully insured premium level, plan size, and county-level demographic characteristics. Firm, state and year fixed effects are included. The dependent variable, $SELF_{it}$, is a binary indicator equal to 1 if firm i offers at least one self-insured or mixed-funded health benefit plan in year t. I use the log of the county-level average premium for fully insured large-group plans as a proxy for the local ESI market price level. The coefficient β_1 captures the effect of changes in fully insured premiums on the likelihood that a firm adopts a self-funded arrangement[11]. I also include the log of the number of plan enrollees, $log(\#PlanEnrollee)$, as a control for plan size. Larger firms have a greater capacity to diversify medical claim risks through broader risk pooling and are more likely

---

[11]Given the inclusion of firm and market fixed effects in equation (1), the coefficient on county-year premium is identified by within-market changes in the price of fully insured contract.

to self-insure due to scale advantages in administrative costs. The coefficient β_2 measures the marginal effect of firm size on self-funding decisions. Note that both covariates are measured at time t to reflect the assumption that the funding arrangement decision is made contemporaneously. The use of the level form of the premium accommodates the possibility that firms respond with a delay when adjusting their funding arrangements in response to changes in fully insured premiums.

A set of county-level demographic characteristics is also included as control variables. First, indicators such as median income, educational attainment, and the unemployment rate capture the economic development and labor market conditions of the region. Second, the racial composition of the county is closely associated with healthcare market dynamics. Prior research has documented that racial disparities influence multiple aspects of healthcare access and delivery, including access to care, treatment intensity, provider selection, and insurance coverage[12]. Third, I control for the coverage rates of public and private insurance at the county level. These ratios capture the extent of health insurance penetration in the local market. Shifts in enrollment patterns can influence both employers and insurers by altering the composition of the risk pool. Finally, I include the share of the population aged 65 and above to account for regional variation in demand for medical services.

Table 4 presents the OLS estimation results. There is a statistically significant positive correlation between fully insured premiums and firms' adoption of self-funded health benefit plans at the local level. This relationship remains stable with the inclusion of county-level demographic controls. Consistent with the documented size effect, firms with larger numbers of enrollees are more likely to adopt self-funded arrangements. However, a causal interpretation requires strong assumptions: namely, that within-market variation in premiums is uncorrelated with unobserved determinants of firms' funding decisions, and that the choice of funding arrangement does not itself influence local insurance premiums. As previously discussed, these assumptions are unlikely to hold. The next sections address these endogeneity concerns by introducing an instrumental variable strategy and a difference-in-differences approach.

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[12]See Cutler et al. (2012), Alsan and Wanamaker (2017), Goodman-Bacon (2018), Hu et al. (2018)

4.2 Do Increases in Health Insurance Market Concentration Causally Drive Firms to Adopt Self-funded Health Benefit Plans?

4.2.1 A Shift-share Instrumental Variable Approach

In this section, I estimate the causal effect of changes in insurance premium on corporate ESI funding arrangement by exploiting shocks to local market concentration. Dafny et al. (2012) shows that an increase in market concentration through national health insurance company merger significantly elevated the market-level premium. On one hand, for-profit health insurer maximize the risk-adjusted profit embedded in the premium by charging a higher market price for the insurance contract when they gain extra market share. On the other hand, the change in market share of large insurance companies is driven by the development of local market health care service demand as well as labor market conditions. This feature motives a shift-share-style approach (Bartik 1991, Blanchard and F.Katz 1992) to isolate the effect of insurer market share shocks. Let $G_{i,s,t}$ be health insurer i's market share by total premium written in year t in the continental markets except state s, and $w_{i,s,t}$ be the market share of insurer i in year t in state s. Define:

$$\text{Predicted Share}_{s,t} = \sum_i (w_{i,s,t_0} \cdot \Delta G_{i,s,t}) \tag{2}$$

where $\Delta G_{i,s,t} = \frac{\sum_{s' \neq s} \text{Premium Earned}_{i,s',t}}{\sum_{s' \neq s} \sum_j \text{Premium Earned}_{j,s',t}} - \frac{\sum_{s' \neq s} \text{Premium Earned}_{i,s',t-1}}{\sum_{s' \neq s} \sum_j \text{Premium Earned}_{j,s',t-1}}$ and w_{i,s,t_0} is the market share of insurance company i in market s at the beginning of the period. $t_0 = 2009$. $\Delta G_{i,s,t}$ measures the growth rate of the national market share of insurer i nationwide, except for state s. That is, the insurance market concentration change in a given state-year is predicted by interacting each insurer i's national investment activity (except local state), with i's market share of s in $t_0 < t$. This application of Bartik type instrument is most similar in nature to Greenstone et al. (2020), who interact pre-existing bank market shares with national changes in bank lending to study the consequences of credit supply shocks. And the use of shift-share type IV is also common in economic and finance research (see, for example, Bound and Holzer 2000, Card 2001, Gallin 2004, Imai and Takarabe 2011, Saks and Wozniak 2011, Autor et al. 2013, Adelino et al. 2017). The constructed instrument is relevant. The F-statistics of first stage regression is 42.56.

Consider the example of Centene Corporation, between 2010 and 2016, Centene Cor-

poration's national market share grew substantially, from 0.59% to 2.61%, and its total direct premiums written increased from \$3.9 billion to \$53.8 billion. In 2009, Centene held a 4.12% market share in Indiana but only 0.02% in Michigan. By 2016, Centene's market share rose to 7.43% in Indiana while remaining negligible in Michigan. The idea behind the instrumental variable is that states where Centene had a higher initial market share and subsequently experienced high national growth rates during the sample period should exhibit more pronounced increases in market concentration. Figure 5 illustrates the geographic distribution of the predicted insurer market share change. For each state, I aggregate the predicted changes from 2010 to 2016 and divide the values into four mutually exclusive quintiles. Darker shading corresponds to states with greater increases in predicted market share over the sample period.

The identifying assumption for the instrument is that the pre-period insurer market shares are exogenous conditional on observables (Goldsmith-Pinkham et al. 2020), i.e., $\mathbf{E}[\epsilon_{it} w_{i,s,t_0} | X_{it}] = 0$, where X_{it} is a vector of control variables[13]. The identification assumption relies on the idea that differential exposure to insurers with higher initial market shares affects changes in firms' funding arrangements only through observed plan and regional characteristics. Importantly, the inclusion of firm fixed effects means that identification requires the initial market shares to be exogenous to future changes in firms' funding types, rather than their levels.

I estimate the IV-2SLS-FE regression using the constructed IV with the following specification:

$$
\begin{aligned}
log(Premium)_{ct} = {}& \beta_0 + \beta_1 \text{Predicted Share}_{s,t-1} + \beta_2 log(\#PlanEnrollees)_{it} \\
& + \beta_3 X_{ct-1} + \tau_t + \delta_i + \gamma_s + \epsilon_{it} \\
SelfInsure_{it} = {}& \beta_0 + \beta_1 log(\widehat{Premium})_{ct} + \beta_2 log(\#PlanEnrollees)_{it} \\
& + \beta_3 X_{ct-1} + \tau_t + \delta_i + \gamma_s + \epsilon_{it}
\end{aligned}
\tag{3}
$$

The first stage regression estimates the relationship between the lagged shift-share instrument and county-level fully insured premiums. The second stage regression examines the effect of the predicted fully insured premium on firms' funding decisions. The dependent

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[13]Borusyak et al. (2022) shows that the consistency can also be obtained under the assumption that shocks are as-good-as-randomly assigned. Adão et al. (2019) discusses inferential issues in this setup.

variable, SelfInsure, is an indicator equal to 1 if the employer offers at least one self-insured or mixed-funded health benefit plan during the plan year. The variable $log(\text{Premium})_{ct}$ is the natural logarithm of the county-level fully insured premium, calculated as the total premiums charged across all fully insured contracts in county c divided by the total number of enrollees in those plans. The instrument, *Predicted Share*$_{st-1}$, is the lagged predicted change in insurer market share at the state level, constructed as the sum of each insurer i's 2009 market share in state s multiplied by the insurer's national market share growth (excluding state s) in year t. The variable $log(\#\text{PlanEnrollee})_{it}$ represents the log of the number of participants enrolled in firm i's plan at the end of the plan year. All regressions are conducted at the firm-year level, with standard errors clustered at the firm level. State, year, and firm fixed effects are included. Table 4 columns (3) and (4) present the results. The first-stage coefficient is significant at the 1% level, indicating that the shift-share instrument is a strong predictor of local health insurance premiums. In the second stage, a 10% increase in local fully insured premiums corresponds to a 4.15 percentage point increase in the likelihood that employers self-fund their health benefit plans. Notably, the second-stage estimate is larger than the OLS estimate, suggesting that omitted variables — such as healthcare provider characteristics — likely bias the OLS coefficient downward. These unobserved factors may simultaneously raise insurance premiums and make self-insurance less attractive, thereby dampening the positive association between premiums and self-insurance in the OLS specification. This channel is particularly relevant in the private market, where providers are able to increase prices (Cooper et al. 2019), and self-insured employers often lack the negotiation leverage to counteract these price increases (Sen et al. 2023).

4.2.2 Diff-in-Diff using Insurer M&A

The second empirical strategy exploits the national merger and acquisition (M&A) of health insurance companies to estimate the impact on premium growth and firms' insurance funding decisions. As discussed above, prior literature has documented that insurer mergers significantly influence local insurance premiums. To satisfy the exogeneity requirement of the research design, the merging entities must be economically significant and operate in multiple markets, ensuring that the mergers are not driven by local invest-

ment opportunities. During the sample period, there was only one major national health insurer merger with a substantial impact on the large group segment: the acquisition of Coventry Health Care Inc. by Aetna Inc., completed in 2013. Before the deal, Aetna Inc. ranked among the top 5 largest insurance companies in the nation, while Coventry Health Care Inc. was one of the top 10 insurers (National Association of Insurance Commissioners 2013). In the large group segment, Aetna operated in 41 states as of 2012 and ranked among the top 5 insurers by premium earned in 24 of these states. Coventry operated in 26 states in 2012 and ranked among the top 5 insurers in 13 of these markets. Both insurers operated in 21 states, with their highest combined market share—28.29%—in Kansas. Figure 6 illustrates the markets in which each insurer operated in 2012 and 2014, along with their respective ranks. States are grouped into four mutually exclusive rank categories: the darkest shading represents states where the insurers held the highest market share positions (#1 or #2), while the lightest shading represents states where they ranked #10 or lower. Following the completion of the merger in 2014, Aetna Inc. ranked higher in many states where Coventry had previously operated. In the main analysis, I excluded Alabama and Tennessee because a separate, smaller merger between Cigna Corp. and HealthSpring took place in these states during the period, directly affecting the large group segment. Notably, HealthSpring's average market share in these two states was only 0.1% in 2012. As a robustness check, I included these states in the analysis and found that the results remain unchanged (see Table A2). The final number of overlapping markets considered is 20.

The key identification assumption is that the acquisition affects corporate ESI funding arrangements only through its impact on local insurance premiums. One potential concern relates to the motive behind the deal. During the sample period, a significant wave of health insurance company mergers and acquisitions was driven by growth in the public insurance market following the enactment of the Medicare Modernization Act (MMA) of 2003, which introduced Medicare Part D and encouraged greater private sector involvement in public plans, including Medicare Advantage (Part C). Many of the firms involved in acquisitions during this period were major players in the public insurance sector, including Coventry Health Care Inc. As noted by Aetna's CEO Mark T. Bertolini, "Integrating Coventry into Aetna will complement our strategy to expand our core insurance business, increase our presence in the fast-growing government sector" (Kamp

2012). In other words, the purpose of the acquisition was not to target the large group segment in any specific region.

I exploit a Diff-in-Diff specification to test whether the Aetna-Coventry merger led to an increase in fully insured premiums in the local market and thereby drove more employers to adopt self-funded health benefit plans. The main specification is:

$$SelfInsure_{it} = \beta_0 + \beta_1 Treat_s \times Post_t + \beta_2 log(\#PlanEnrollees)_{it}$$
$$+ \beta_3 X_{ct-1} + \tau_t + \delta_i + \gamma_s + \epsilon_{it} \tag{4}$$

The Self-Insured indicator equals 1 if the employer offers at least one self-insured or mixed-funded health benefit plan during the plan year. $Treat_s$ is an indicator equal to 1 if both the acquirer and target insurance firms operated in state s in 2012. $Post_t$ is an indicator equal to 1 for all years beginning in 2014, following the completion of the merger in 2013. The variable $log(\#PlanEnrollee)_{it}$ represents the log of the number of participants enrolled in firm i's plan at the end of the plan year. The coefficient β_1 is the average treatment effect of the increased market concentration. Table 5 Column (1) reports the estimates without county-level controls, while Column (2) includes these controls. The average treatment effect indicates that the merger leads to a 2.9% increase in the likelihood that employers shift from an insurance contract to a self-funded arrangement. This suggests that firm managers actively seek lower-cost benefit plans when local health insurer market concentration increases. Table 5 Columns (3) and (4) present results using a 2SLS-IV specification. The first-stage regression relates the treatment indicator to local fully insured premiums. The positive and significant first-stage coefficient is consistent with the argument in Bayot et al. (2017), where government experts provided econometric evidence that Aetna and Coventry plans increased premiums or reduced benefits relative to competitor plans following their merger. The second stage regresses the predicted local fully insured premium on the self-insure indicator. The results confirm the channel whereby insurer mergers lead to higher premiums, prompting more firms to abandon fully insured contracts and adopt self-funded plans to avoid paying elevated premiums. Lastly, I examine the pattern of self-insured plan adoption over time by replacing the $Post_t$ indicator with year-specific dummies. By interacting $Treat$ with separate year indicators (with 2013 as the omitted reference year), this specification

assesses whether trends in market concentration differed prior to the merger in markets that were affected by the merger or not. Figure 8 displays the coefficient estimates on these yearly interactions with $Treat$, along with their 95 percent confidence intervals. The coefficients for the pre-2013 years are all statistically insignificant.

4.2.3   Heterogeneous Impact of Insurer M&A

One limitation of the above specification is that the treatment indicator does not capture the heterogeneous effects of the merger across geographic regions. In particular, the effect on insurance premiums should be larger in regions where Aetna Inc. and Coventry Health Care Inc. had a substantial pre-merger market share. To address this, I construct a measure of simulated change in market concentration (simΔHHI) induced by the merger, following Garmaise and Moskowitz (2006) and Dafny et al. (2012). The simΔHHI captures the mechanical increase in the Herfindahl-Hirschman Index (HHI) of the large-group segment market in each state that would result from the merger, holding other insurers' shares constant. Specifically, the simulated change in market concentration (simΔHHI) is calculated as:

$$
\begin{aligned}
sim\Delta HHI_s &= (\text{Aetna 2012 Share}_s + \text{Coventry 2012 Share}_s)^2 \\
&\quad - \text{Aetna 2012 Share}_s^2 + \text{Coventry 2012 Share}_s^2) \\
&= 2 \times \text{Aetna 2012 Share}_s \times \text{Coventry 2012 Share}_s
\end{aligned}
\tag{5}
$$

For example, if Aetna has a market share in Florida of 17.19% in 2012, while Coventry has a market share in Florida of 5.15% in 2012, the simulated change in market concentration would be 88.52 (scaled by 10,000). As another example, Coventry has 10.66% market share in Nebraska while Aetna does not have business there in 2012, then $sim\Delta HHI = 0$. Figure 7 plots the geographic distribution of $sim\Delta HHI$. States shaded in blue represent the treated states. States are grouped into four mutually exclusive categories based on the magnitude of the simulated change in market concentration. Kansas, Florida and Pennsylvania have the largest predicted change in market concentration $sim\Delta HHI \geq 50$.

I replace the treatment dummy in Equation 4 by constructed predicted change in market

concentration. i.e.,

$$SelfInsure_{it} = \beta_0 + \beta_1 sim\Delta HHI_s \times Post_t + \beta_2 log(\#PlanEnrollees)_{it}$$
$$+ \beta_3 X_{ct-1} + \tau_t + \delta_i + \gamma_s + \epsilon_{it} \tag{6}$$

Results are displayed in column (1)-(2) in Table 6. As anticipated, the coefficient on $sim\Delta HHI_s \times Post_t$ is statistically significant at 0.157, indicating that a 1,000-unit increase in HHI corresponds to 16% more employers adopt self-funded health benefit plans on average in the local community. Column (3)-(4) displays the IV coefficients. Given the average $sim\Delta HHI_s$ is 14.34 across all markets, the point estimate of 0.591 implies that, in a typical market, the merger induced an average premium increase of approximately 0.85 percentage point each year after the merger. The second stage is, again, positively significant and greater than the OLS estimation in Equation 1, suggesting the endogeneity issues impose an attenuation bias on the effect between insurance premium and self-funded plan adoption.

4.3 Self-Funded Health Plans: An Optimal Corporate Financing Policy

In this section, I argue that the choice of funding arrangement constitutes a corporate financing decision made by managers seeking to maximize firm value in the face of large and continuously rising health insurance premiums. In the insurance literature, the fundamental rationale for firms to purchase insurance is linked to investment opportunities contingent upon the realization of different "states" — that is, varying levels of medical claims. Fully insured and mixed-insured health benefit plans redistribute firm wealth and investment opportunities across these states. If the price of insurance were actuarially fair, the premiums paid by employers would equalize expected cash flows across funding arrangements. In such a case, risk-neutral firms would be indifferent between fully insured and self-insured structures, assuming no frictions in the health insurance market. However, exogenous increases in insurance premiums introduce frictions that affect firm behavior. As discussed by Ehrlich and Becker (1972), the value impact of such price increases stems from a substitution effect: demand for insurance declines because

the opportunity cost of purchasing insurance becomes higher, holding the marginal value of internal fund constant. The availability of self-insured or mixed-insured arrangements enables firms to hold total benefit costs constant by reducing reliance on overpriced insurance. In the absence of adjustment costs associated with shifting toward self-insurance, the firm's optimal level of insurance coverage should deviate from full insurance.

Recent work by Ouimet and Tate (2023), using comprehensive Census microdata, documents the negative impact of rising health insurance costs on firm valuation, as measured by Tobin's Q. Building on this evidence, I further test whether publicly traded firms that adopt self-insured health benefit plans are insulated from the financial frictions arising from the health insurance market. Using a matched sample of Form 5500 filings and Compustat data, I first examine whether publicly traded firms adjust their funding arrangements in response to insurance market conditions in a manner consistent with the patterns observed in the broader sample. The results are presented in Table 7 Panel A. I begin by examining firms that are either fully insured or entirely self-insured. The estimated coefficient is 0.0526, which is larger than the corresponding estimate for the broader sample that includes private firms. This suggests that publicly traded firm managers are more actively involved in selecting health benefit plan funding arrangements. Next, I allow the dependent variable to be continuous in order to capture heterogeneous exposure to insurance market frictions among mixed-insured plans. Specifically, I define $SelfInsureEnrollee\%$ as the fraction of a firm's health plan participants covered by self-insured contracts, which ranges from 0 (fully insured) to 1 (fully self-insured). Columns (2) and (3) report estimates using $Treat_s$ and $sim\Delta HHI_s$, respectively. The results indicate that publicly traded firms adjust the composition of plan participants across funding arrangements in response to rising insurance premiums driven by increased market concentration.

To test the value implications of firms' funding decisions, I estimate the following model using the Aetna-Coventry merger as a quasi-experiment to provide exogenous variation in insurance market concentration::

$$TobinQ_{it} = \beta_0 + \beta_1 Treat_s \times Post_t + \beta_2 X_{it-1} + \tau_t + \delta_i + \epsilon_{it} \qquad (7)$$

$TobinQ_{it}$ is approximated using the market-to-book ratio, as defined in Table A1. X_{it-1} denotes a set of lagged firm-level control variables, including total assets, operating cash flow, dividend payout, sales ratio, debt ratio, and cash ratio. All control variables are scaled by lagged total assets. The estimates for the full sample of publicly traded firms are statistically significant at the 1% level, as shown in Table 7 Panel B. Firms located in treated states experience an expected decline in their market valuation of 0.13 standard deviations relative to firms in unaffected states following the insurer merger. The hypothesis is that, this negative effect should be concentrated among firms with fully insured contracts, while self-insured firms are not significantly affected. I divide the sample into three categories based on the pre-merger funding arrangement: fully insured, mixed insured, and self-insured. The sample includes 362 fully insured firms, 357 mixed insured firms, and 237 self-insured firms. As expected, firms with an insurance contract through a licensed health insurer exhibit a decline in market valuation following the merger. The decline in the Tobin's Q ratio is larger among firms that are comprehensively fully insured. In contrast, self-insured firms—who are not exposed to the increased insurer market concentration because their third-party administrator (TPA) contract does not require a state-licensed carrier—do not experience a significant change in market valuation as a result of the merger.

To interpret the observed effect, several studies offer plausible explanations for the negative coefficients associated with the fully insured sample. For instance, firms facing higher health insurance costs may reduce capital expenditures, restrict R&D investment, shift costs to employees through lower wages, and adjust their labor composition or substitute low-skill workers with information technology (see Madrian 1994; Baicker and Chandra 2006; Gao et al. 2022; Tong 2024). First, the labor health channel. Since employers under self-funded arrangements avoid paying elevated insurance premiums, they do not face pressure to pass higher costs onto employees through lower wages or reduced benefits. As a result, the coverage ratio and plan design are expected to remain stable, ensuring that employees who previously received employer-sponsored insurance (ESI) continue to be covered and maintain their productivity in the workplace. Second, the internal funds channel. Because self-funded employers do not pay premiums to health insurers, increases in market insurance prices do not affect firm cash flows or restrict funding for other operations. Thus, elevated insurance premiums do not spill over to limit firms' investment

opportunities, as contracted health insurers simply serve as third-party administrators without bearing financial risk. Third, the labor mobility channel. Rising healthcare costs create incentives for employers to reduce wages, cut ESI coverage, or limit hiring, thereby reducing overall employee welfare. This, in turn, increases employees' likelihood of leaving their jobs in search of higher wages or better health coverage elsewhere. Empirical evidence supporting this channel is presented in Table A4: following the national insurer merger, firms purchasing fully insured contracts in affected regions reduced hiring relative to unaffected firms. Consistently, no significant labor market pass-through is observed for mixed-insured or self-insured firms.

4.4   Robustness

I conduct several robustness checks to validate my main specification. First, I incorporate another merger that occurred during the sample period: the Cigna–HealthSpring merger, which was completed in 2012. This transaction directly affected the large group segment, but its economic impact was limited because HealthSpring operated only in Alabama and Tennessee in its large group business line as of 2011. Table A2 presents the results when both the Cigna–HealthSpring and Aetna–Coventry mergers are included in the analysis using a staggered Difference-in-Differences approach.

$$SelfInsure_{it} = \beta_0 + \beta_1 Treatment_{st-1} + \beta_2 X_{ct-1} + \tau_t + \delta_i + \gamma_s + \epsilon_{it} \qquad (8)$$

The variable $Treatment_{st-1}$ measures a firm's exposure to the insurer merger. Column (1) reports the specification where $Treatment$ is a binary indicator. Column (2) reports the specification where $Treatment$ is measured continuously using the simulated change in market concentration, $sim\Delta HHI$. Columns (3)–(6) present the results using instrumental variable specifications, where $Treatment$ is implemented in both binary and continuous forms. Across all specifications, the estimated coefficients are consistent with those obtained in the main analysis, indicating robustness of the results.

The second robustness check uses an alternative definition of self-insurance. Large firms often offer multiple health plans, with varying fractions of their workforce enrolled in

plans with different funding arrangements. Using a simple self-insurance dummy may introduce measurement error in such cases. To address this, I replace the self-insure dummy with a continuous measure: the fraction of employees enrolled in self-insured plans. The dependent variable, $SelfInsureEnrollee\%$, equals 0 if the firm offers only fully insured plans, equals 1 if the firm offers only self-insured plans, and takes values between 0 and 1 for mixed-insured firms. As shown in Table A3, both the Bartik IV specification and the Diff-in-Diff specification using insurer M&A produce results consistent with the main analysis.

Finally, I conduct a placebo test in which states are randomly assigned as "treated" markets in the context of the Aetna-Coventry merger. Table A5 reports the results. The placebo estimates show no significant differences in either firms' self-insurance decisions or firm market valuations between the placebo-treated and control groups.

5   Medical Claim Risk and Corporate Policy

Self-funded employers are exposed to the financial risk associated with medical claims. However, it remains unclear how firm managers respond when the level of expected medical claims increases. On one hand, managers have an incentive to employ risk management tools to prevent fluctuations in internal funds and to reduce the expected costs of financial distress (Froot et al. 1993, Aunon-Nerin and Ehling 2008, Pérez-González and Yun 2013). On the other hand, if firms are unable to fully mitigate the volatility in medical bills, managers must pay claims as they arise and adjust other production activities accordingly.

Indeed, most employers utilize stop-loss insurance to protect themselves against catastrophic claims. As discussed in previous sections, stop-loss insurance functions similarly to a put option by capping the maximum claim amount for which employers are responsible. To ensure that employers retain sufficient financial exposure to be classified as truly self-funded, some state regulators have established minimum stop-loss attachment points. In the following sections, I use these regulatory changes as an exogenous shock that increases claim risk exposure for self-insured firms and study how firms adjust their

financial decisions in response.

Table 3 summarizes the states that newly imposed or revised minimum stop-loss deductible regulations during the sample period. Regions that changed these regulations prior to the start of the sample period or after its end do not contribute to the variation used to identify the coefficients of interest in the analyses that follow. In total, eleven states implemented changes to minimum deductible requirements between 2010 and 2016. Appendix B provides details on the specific regulations in each state, along with a numerical example illustrating how such regulations increase the expected medical claim burden for employers. See also Meiselbach and Eisenberg (2025) for a related study on the impact of stop-loss regulation on employer medical risk exposure using a sample of firms in California. In general, firms with self-funded health benefit plans should anticipate higher expected plan costs in those states. Next, I examine how firms respond to the increased claim risk through two key decisions: their employer-sponsored insurance (ESI) funding arrangement and their corporate investment policies.

5.1 Does an Increase in Expected Medical Claims Cause Fewer Firms to Choose Self-Funded Health Benefit Plans?

I first examine whether an increase in expected medical bills discourages marginal firms from shifting from fully insured to self-insured health benefit plans. To do so, I exploit a triple-difference specification using the Aetna-Coventry merger as a quasi-experimental shock, focusing on the sample of publicly traded firms.

$$
\begin{aligned}
SelfInsure_{it} = {} & \beta_0 + \beta_1 Treat_s \times Post_t \times Stoploss_{st-1} + \beta_2 Treat_s \times Post_t \\
& + \beta_3 Treat_s \times Stoploss_{st-1} + \beta_4 Stoploss_{st-1} + \beta_5 log(\#PlanEnrollees)_{it} \\
& + \beta_6 X_{it-1} + \tau_t + \delta_i + \epsilon_{it}
\end{aligned}
\tag{9}
$$

$Treat_s$ is an indicator equal to 1 if both the acquiring and target insurance firms operated in state s in 2012. $Post_t$ is an indicator equal to 1 for all years beginning in 2014, following the completion of the merger in 2013. $Stoploss_{st-1}$ is an indicator equal to 1 if a new stop-loss deductible limitation became effective in state s in year $t-1$. The

variable log(#Plan Enrollees)$_{it}$ represents the log of the number of participants enrolled in firm i's plan at the end of the plan year. Table 8 Column (1) presents the results from this specification. Fully insured firms affected by the merger are 12% less likely to shift toward a self-funded arrangement if the stop-loss deductible threshold increased in the state where the firm purchases insurance. Column (2) reports estimates using the continuous dependent variable $SelfInsureEnrollee\%$, which accounts for mixed-insured firms, and yields similar results.

I investigate how changes in medical claim risk exposure affect firm market value. As before, I divide firms into three subsamples based on their funding arrangement prior to the merger. Table 8 Columns (3)–(5) present the coefficients from the triple-difference specification. Consistent with the findings in earlier sections, fully insured firms experience a decline in market valuation following the merger. However, their valuations are not significantly affected by the stop-loss regulation. Similarly, pre-merger self-insured firms show no significant change in market valuation. As will be discussed in the following section, these self-insured firms instead adjust other aspects of their corporate policies to maintain stable production activities. Mixed-insured firms exhibit the largest negative impact. For the fully insured portion of their coverage, the optimal choice for marginal enrollees would be to shift toward self-insured arrangements. However, the presence of stop-loss deductible regulations increases the expected medical costs associated with switching funding types. At the same time, remaining in the same mixed-insured status exposes these firms to higher premiums driven by the insurer merger, with these costs passing through to their production activities. Table A6 reports results using the continuous variable $sim\Delta HHI$ in place of the treatment dummy $Treat$ to capture heterogeneous exposure to the merger. Compared to firms that fund their ESI using only a single arrangement, mixed-insured firms located in states with high pre-merger Aetna-Coventry market shares are significantly more negatively affected. Returning to the argument that the ESI funding type functions as part of a firm's broader financing decision aimed at optimizing payout, an increase in expected medical bills reduces the likelihood that firms will adopt a self-funded arrangement.

5.2 Does an Increase in Expected Medical Claims Cause Self-insured Firms to Reduce Corporate Investment?

Corporate capital expenditure is a critical driver of regional economic development, innovation, and long-term growth (De Long and Summers 1991). In the context of rising healthcare costs, earlier studies have shown that employers often pass increased benefit costs onto the labor market through reduced wages or employment levels (Summers 1991, Gruber 1994). Subsequent work suggests that this pass-through is incomplete (Baicker and Chandra 2006), consistent with more recent evidence that some of the burden is absorbed through lower capital and R&D investment (Tong 2024). However, these studies focus exclusively on fully insured firms. For self-insured firms, which are not directly exposed to rising insurance premiums in the same way, it remains unclear whether increased medical claims risk has a spillover effect on corporate investment.

I answer this question using the setting of the stop loss insurance regulation. To construct the sample, I focus on the states that have a new regulation on minimum stop loss deductible during the sample period. Based on the funding arrangement of firm ESI one year before the law effective, some firms are exposed to the new regulation while others are not. I define *Exposure* as a treatment dummy equals to one if the firm had only one self-insured plan, or a mixed-insured plan with more than 21% of enrollees covered by a self-insured contract, in the year prior to the implementation of the stop-loss deductible restriction. The cutoff point is determined by the sample mean of mixed insured firms. Mixed insured plans that do not report enrollees in different contracts with different funding arrangements are excluded. I test whether the increased expected medical bills spillover to the corporate investment under a staggered Diff-in-Diff specification:

$$\frac{I}{K}_{it} = \beta_0 + \beta_1 Exposure_{it-1} + \beta_2 X_{it-1} + \tau_t + \delta_i + \epsilon_{it} \tag{10}$$

The dependent variable is corporate investment, defined as the ratio of capital expenditure and lagged total asset. Results are reported in Table 9. Firms located in affected areas that have a reasonable fraction of enrollees covered by self-funded plans experienced a decline after the stop loss regulation become effective. The point estimate is -1.51%. Given the average investment ratio for exposed firms is 6.8%, the average treatment

effect represents 22% of capital expenditure on average. The coefficients do not vary much if the states have no change in stop loss regulation are also included. The dynamic treatment effect is plotted in Figure 10 with the following OLS specification:

$$\frac{I}{K}_{it} = \beta_0 + \sum_{\substack{k=-3 \\ k \neq 0}}^{3} \beta_k Stoploss_i \times 1\{\text{k year from regulation}\} + \beta_2 X_{it-1} + \tau_t + \delta_i + \epsilon_{it} \quad (11)$$

The indicator variable $Stoploss_i$ equals 1 if the firm was self-insured one year prior to the implementation of a new state-level stop-loss deductible threshold. The erosion effect on corporate investment is most pronounced in the first year (2.18%) and persists into the second year (1.94%) following the regulatory change.

Other corporate policies are also related. Since employer-sponsored insurance (ESI) is a component of labor compensation, one direct impact should manifest through the labor market. On one hand, higher ESI costs increase total labor costs, holding wages constant, thereby creating incentives for employers to reduce hiring. On the other hand, higher ESI costs may prompt firms to lower coverage rates or tighten eligibility standards, reducing the share of workers eligible for benefits. This effect—opposite to the well-documented job-lock phenomenon (Madrian 1994)—may increase labor mobility and reduce overall productivity. Table 10 Column (1) test this labor market effect. After the adoption of stop-loss deductible regulations, exposed self-insured firms experience a sharp decline in the number of employees hired.

Another pathway for the spillover effect on corporate productivity is through operating cash flow. Since investment levels depend heavily on internal fund—given the high cost of external finance (Fazzari et al. 1988, Lamont 1997, Kaplan and Zingales 1997, Alti 2003, Rauh 2006)—higher medical claims deplete liquid resources and lead to certain level of financial distress. Table 10 Columns (2) tests this channel. The firms incur lower operating profit after the expected level of medical bills become higher.

Finally, most of self-insured plans rely on cash holdings to make payment as the medical bills incur. According to the report of Department of Labor, 83.9% of self-insured plan and 80.3% of mixed insured plans who report a benefit arrangement in Form 5500 utilize

general assets to make benefit payments.[14] Both theoretical and empirical studies have constructed linkage between labor cost and corporate cash holding (Klasa et al. 2009, Ghaly et al. 2017, Bacchetta et al. 2019). I test whether managers increase the precautionary cash holding in response to the increased expected medical claim expenditure. Table 10 Columns (3) reports the point estimation. Self-insured firms hold 2.5% more liquid asset when they anticipate higher medical bills. One channel is the direct effect of precautionary motive, as medical bills can arrive at any time which requires immediate payment. Another channel can be strategic consideration that elevated benefit cost may make managers pass some of the burden to employers, and the cash holding serves as a bargaining tool against the union or employees.

6   Concluding Remarks

This paper examines why firms choose to adopt self-funded health benefit plans. Despite being a significant financial decision, the choice of funding arrangement for employer-sponsored insurance (ESI) has received limited attention in prior finance literature. By optimally selecting their ESI funding structure, managers seek to maximize shareholder value amid rising health insurance costs and insurer market friction.

One of the key determinants of employers' decision to self-insure, as documented in this paper, is the net cost of health insurance contracts. This cost—representing over 1% of U.S. GDP—has been shown to adversely affect firms' investment opportunities. Using a shift-share instrumental variable approach and exploiting variation from health insurer mergers and acquisitions (M&A), I provide causal evidence that rising employer-sponsored health insurance premiums significantly increase the likelihood that firms transition from fully insured to self-funded arrangements. By doing so, employers avoid the 'premium on the premium' embedded in traditional insurance contracts and are subsequently valued more highly in capital markets relative to peers who continue to bear higher healthcare costs.

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[14]The data, published in 2023, is based on Form 5500 filings from the 2020 plan year. There are 37,934 filings for self-insured health benefit plans, of which 22,993 report details on their benefit arrangements. Additionally, there are 4,422 filings for mixed-insured plans, all of which provide information on their benefit arrangement. See Walsh (2023).

Self-funded health benefit plans require employers to assume a certain level of financial risk associated with medical claims. To mitigate the impact of catastrophic expenses, most firms purchase stop-loss insurance. In additional analyses, I show that fluctuations in medical claims can spill over into other aspects of corporate financial policy, highlighting the importance of prudent risk management for firms that self-insure.

This research also highlights the critical role of firm managers in mitigating total healthcare costs in the economy. As health insurance premiums continue to rise, the adoption of self-insured arrangements serves as a countervailing force against premium growth. Moreover, the findings carry several policy implications. First, the current antitrust oversight in the health insurance sector may be insufficient, given the persistent rise in market concentration and insurance premiums. The insurance industry constitutes a distinct and specialized form of financial intermediary. As noted by Cicala et al. (2019), the Affordable Care Act imposes limits on insurer profit margins but does not regulate the absolute level of profit. This regulatory structure incentivizes insurers to increase underlying healthcare costs. My research suggests that such cost increases can propagate throughout the economy, ultimately reducing aggregate output. Second, as self-insured health benefit plans have become increasingly prevalent—now covering more than 60% of the working-age population—this study underscores the importance of rigorous oversight in the self-insured segment. This includes regulation of benefit design, employee cost-sharing arrangements, and capital reserve requirements to ensure financial stability and care quality.

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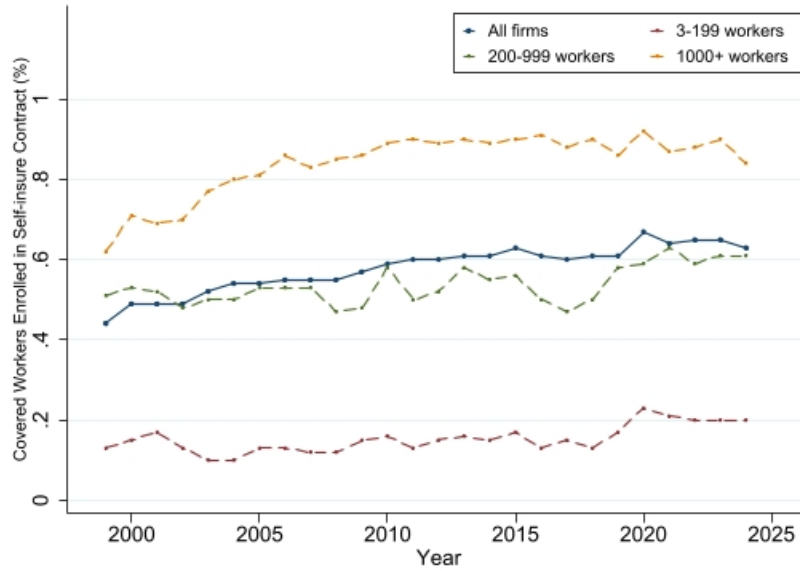Koijen, R. S. J., Philipson, T. J., and Uhlig, H. (2016). Financial Health Economics. *Econometrica*, 84(1):195–242.

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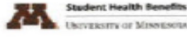
Figure 2: Fraction of Enrollees Covered by Self-insured Health Benefit Plans (by Firm Size)

This figure presents the fraction of employees enrolled in employer-sponsored health insurance who are covered by self-funded health benefit plans, segmented by firm size. The data cover the period from 1999 to 2024 and are sourced from the KFF Employer Health Benefits Survey (Kaiser Family Foundation 2024).

Data source: KFF Health Benefit Survey 2024

Figure 3: An Example Self-insured Insurance Card

Figure 4: Variation Across Counties in the Shift Toward Self-Funded Health Benefit Plans

This figure presents the change in the fraction of ESI enrollees covered by self-funded health benefit plans over the time period of 2011-2016. The share of ESI enrollment in self-funded plans was calculated in 2011 and 2016 among all counties, and the difference was calculated for each county. Counties were divided into four mutually exclusive categories on the basis of the calculated change in share from 2011 to 2016. Employer-sponsored insurance data are obtained from the IRS Form 5500 annual filings.
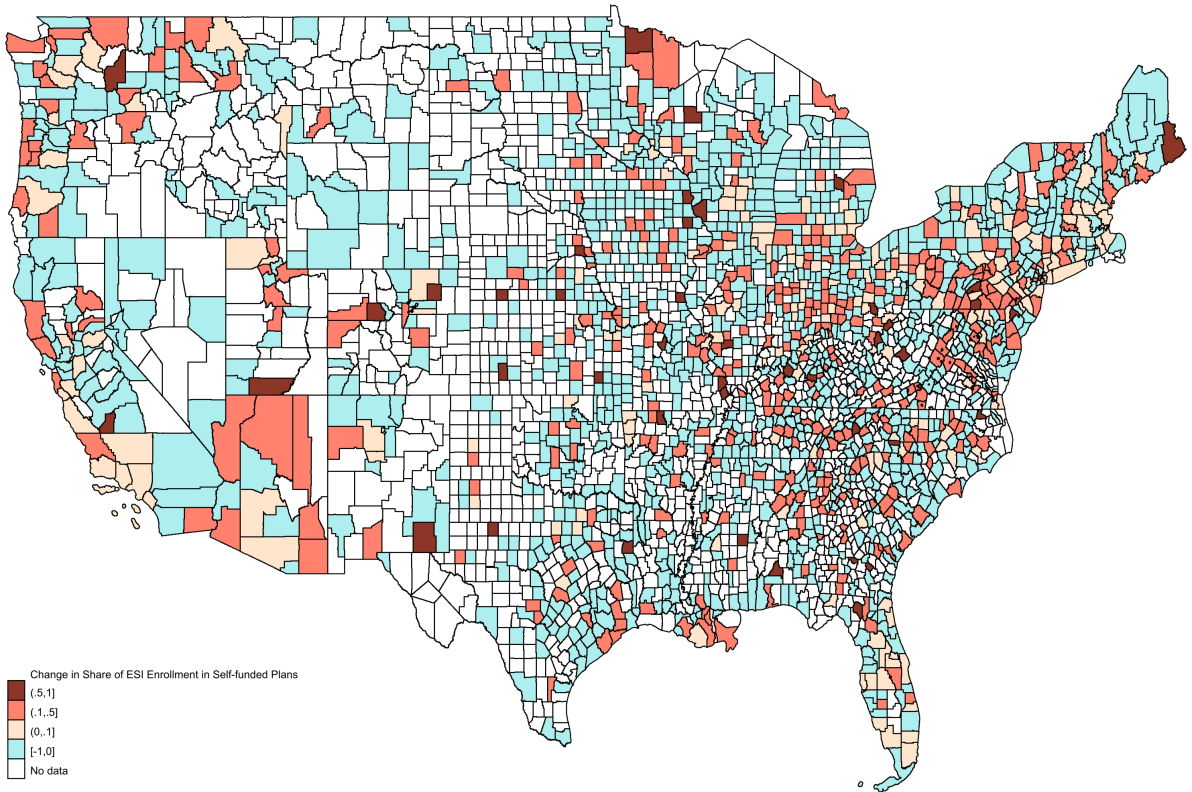
Figure 5: State Bartik quintiles

The map plots quintiles of the Bartik shock between 2016 and 2016, which is the change in insurer market share growth rate at the national level interacted with the regional share at the state level. The darker shading represents the higher predicted change in market share.
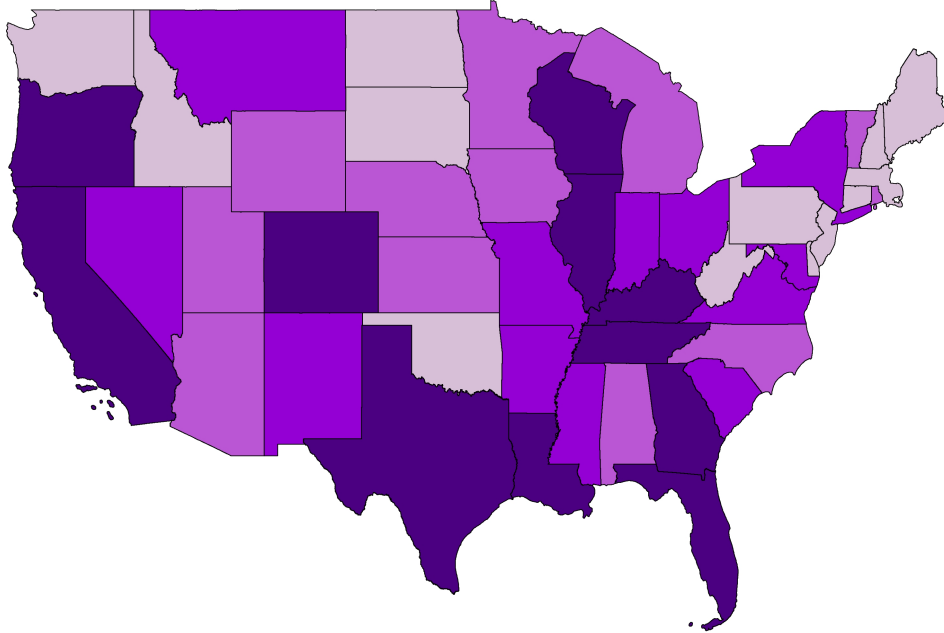
Figure 6: Aetna Market Share around the Merger

This figure presents the state-level market share rank of Aetna Group in the large group segment before and after its acquisition of Coventry Health Care Inc. in 2013. States are categorized into four mutually exclusive rank groups. The darkest shading represents states where Aetna held the highest market share positions (#1 or #2), while the lightest shading represents states with the lowest market share rankings (#10 or higher). State-level market share data are obtained from the National Association of Insurance Commissioners (NAIC) Supplemental Health Care Exhibit Report (2010–2016).
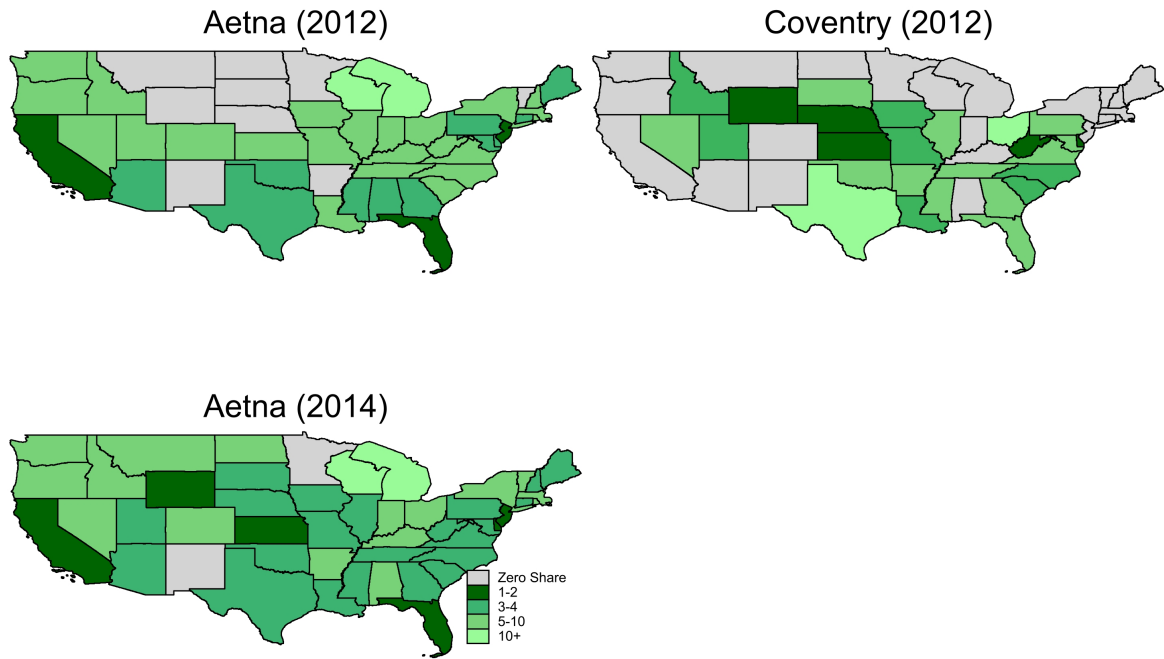
Figure 7: Simulated Change in Market Concentration by Aetna-Coventry Merger

This figure displays the geographic distribution of states affected by the Aetna–Coventry merger completed in 2013. States shaded in blue represent the treated states, defined as those in which both Aetna Group and Coventry Health Care Inc. operated by 2012. Treatment intensity is measured using the simulated change in the Herfindahl-Hirschman Index (HHI) induced by the merger, calculated as $sim\Delta HHI_s = (AetnaShare_{s,2012} + CoventryShare_{s,2012})^2 - (AetnaShare_{s,2012}^2 + CoventryShare_{s,2012}^2)$. States are grouped into four mutually exclusive categories based on the magnitude of the simulated change in market concentration. The data on state market share for health insurance companies are sourced from the National Association of Insurance Commissioners (NAIC) Supplemental Health Care Exhibit Report (2010-2016).
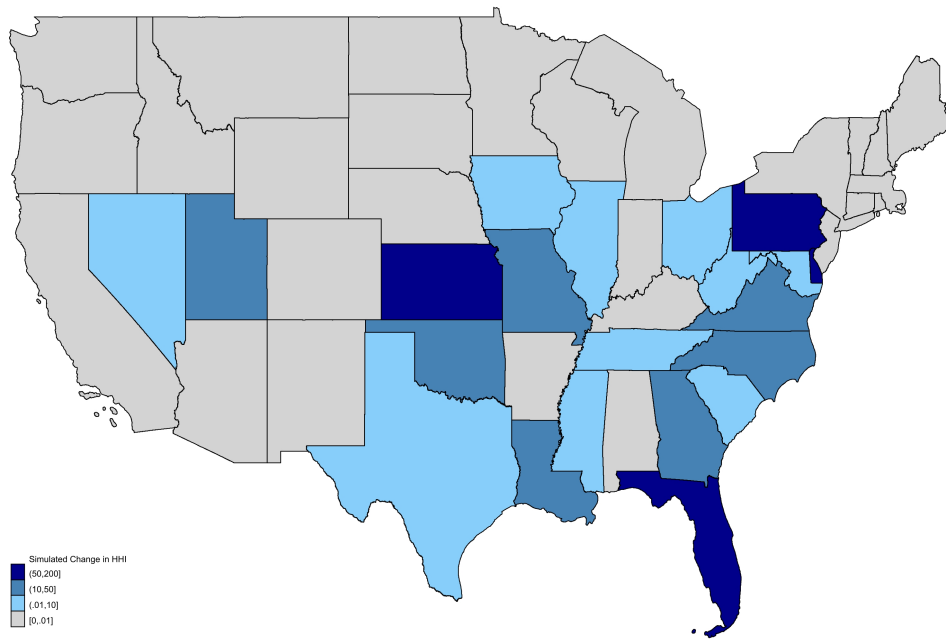
Figure 8: Dynamic Effect of Aetna-Coventry Merger on Firms' Decision to Self-fund Employer Sponsored Health Benefit Plans

This figure presents the coefficient β_1 plots for the following regression specification:

$$SelfInsure_{it} = \beta_0 + \beta_1 Treat_s \times \sum_{\substack{j=2010 \\ j \neq 2013}}^{2016} Year_j + \beta_2 log(\#PlanEnrollees)_{it}$$

$$+ \beta_3 X_{ct-1} + +\tau_t + \delta_i + \gamma_s + \epsilon_{it}$$

The dependent variable is a binary indicator equal to 1 if the employer offers at least one self-insured or mixed-funded health benefit plan during the plan year. $Treat_s$ is an indicator equal to 1 if both the acquiring and target insurance firms operated in state s in 2012. $Year_t$ is a year dummy, with 2013 omitted as the reference year. The variable $log(PlanEnrollee)_{it}$ represents the log of the number of participants enrolled in firm i's plan at the end of the plan year. State, year and firm fixed effects are included. Standard errors are clustered at the firm level, and 95% confidence intervals are reported.
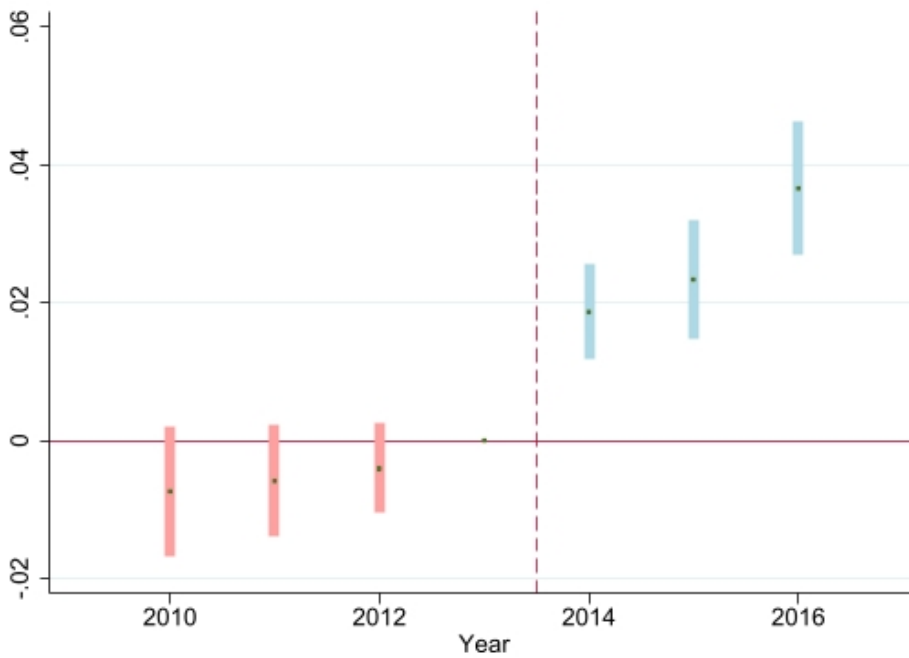
Figure 9: Dynamic Effect of Aetna-Coventry Merger on Firm Market Valuation (by Funding Types)

This figure presents the coefficient β_1 plots for the following regression specification:

$$TobinQ_{it} = \beta_0 + \beta_1 \sum_{\substack{j=2011 \\ j \neq 2013}}^{2016} Treat_s \times Year_j + \beta_2 X_{it-1} + \tau_t + \delta_i + \epsilon_{it}$$

The dependent variable is Tobin's Q, approximated using firm market-to-book ratio. The red line represents regression coefficient β_1 using sample of firms that have some enrollees covered by fully insured contract. The blue line represents the result using the sample of firms that all enrollees are enrolled in self-insured or mixed insured plans as of 2013. $Treat_s$ is an indicator equal to 1 if both the acquiring and target insurance firms operated in state s in 2012. $Year_t$ is a year dummy, with 2013 omitted as the reference year. Year and firm fixed effects are included. Standard errors are clustered at the firm level, and 95% confidence intervals are reported.

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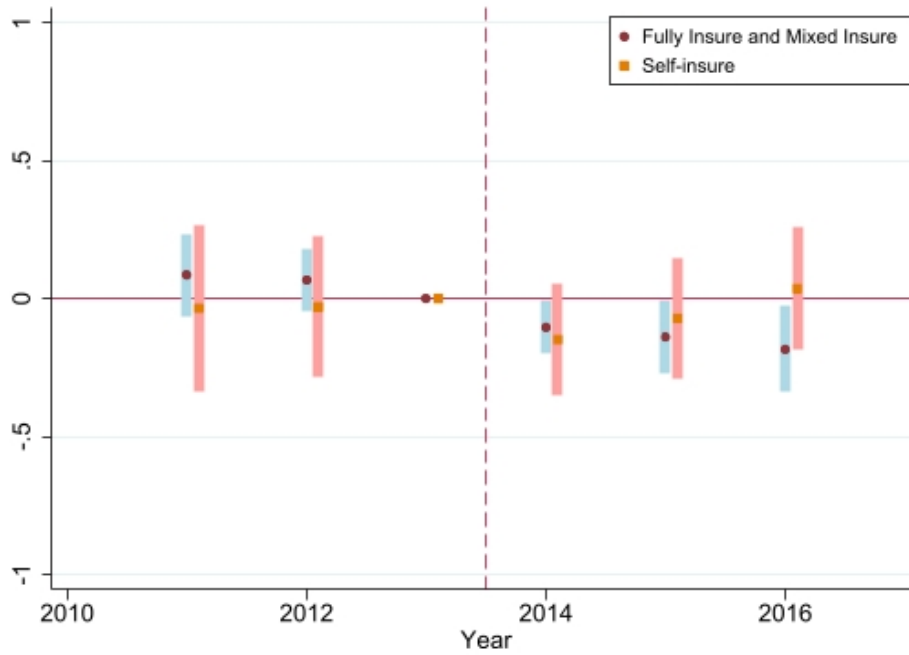
Figure 10: Dynamic Effect of Stop-loss Insurance Deductible Regulation on Corporate Investment

This figure presents the coefficient β_1 plots for the following regression specification:

$$\frac{I}{K}_{it} = \beta_0 + \sum_{\substack{k=-3 \\ k \neq 0}}^{3} \beta_k Stoploss_i \times 1\{\text{k year from regulation}\} + \beta_2 X_{it-1} + \tau_t + \delta_i + \epsilon_{it}$$

The dependent variable is corporate investment, defined as the ratio of capital expenditure and lagged total asset. D_{it}^e is an indicator equal to 1 if the firms are self-insured one year before state s had a new minimum stop loss deductible regulation and e years away from initial treatment. Year and firm fixed effects are included. Standard errors are clustered at the firm level, and 95% confidence intervals are reported.

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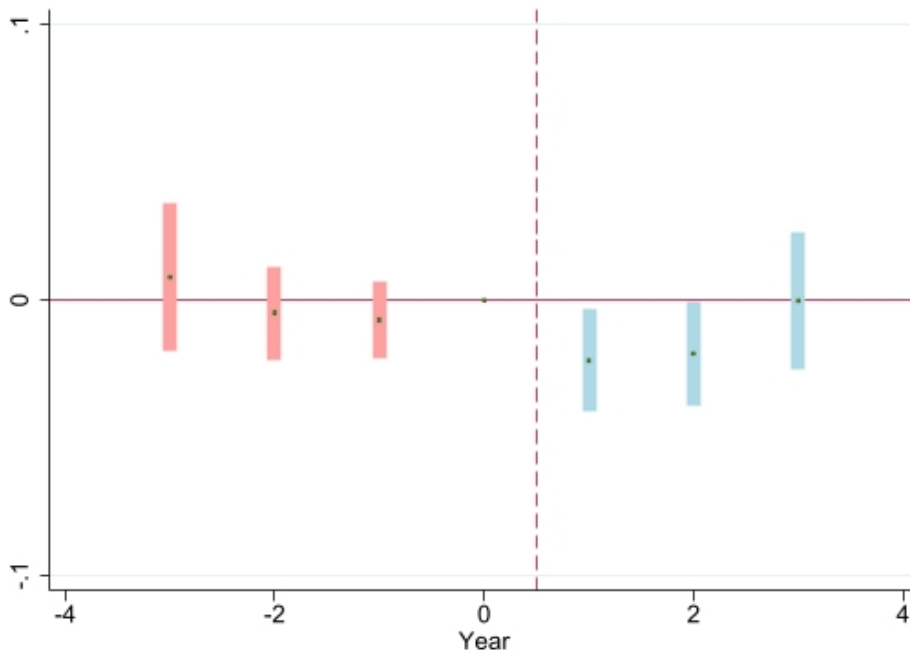
Table 1: Summary Statistics: ESI and County Characteristics

This table presents summary statistics for employer-sponsored health insurance and county-level demographics. Panel A reports the fraction of firms that adopt self-insured health plans and the number of enrollees per benefit plan at the firm-year level. Panel B reports the fraction of firms based on whether changed funding arrangement during the sample period. Self-insured health benefit plans is defined in the Department of Labor's Group Health Plan Research Files. The Self-Insured indicator equals 1 if the employer offers at least one self-insured or mixed-funded health benefit plan during the plan year. Panel B summarizes county-level demographic information by year. Fully insured premiums are calculated as the total premiums charged across all fully insured contracts within a given county, divided by the total number of enrollees in fully insured plans in that county. Employer-sponsored insurance data are obtained from the IRS Form 5500 annual filings. County demographic data are sourced from the American Community Survey, as provided by IPUMS USA (Ruggles et al. 2025). The sample period covers 2010–2016.

Panel A: Employer and County Characteristics

	N	Mean	Std	p25	p50	p75
Employer Characteristics						
SelfInsure	181506	.382	.485	0	0	1
#Enrollee	181506	1354.3	14675.67	159	266	598
County Characteristics						
Fully Insured Insurance Premium ($000)	2767	6.9	1.77	5.8	6.843	7.928
Unemployment Rate (%)	2767	.086	.031	.064	.082	.104
Median Houshold Income ($000)	2767	59.391	14.885	48.7	56	67.7
White (%)	2767	.791	.144	.719	.826	.902
Black (%)	2767	.132	.125	.041	.094	.181
American Indian (%)	2767	.014	.021	.006	.009	.015
Asian (%)	2767	.049	.059	.018	.032	.055
Private Health Insurance coverage (%)	2767	.681	.095	.619	.687	.75
Public Health Insurance Coverage (%)	2767	.305	.072	.253	.302	.353
High School Graduate (%)	2767	.685	.054	.66	.693	.719
Age 65+ (%)	2767	.137	.038	.113	.132	.152

Panel B: ESI Funding Arrangement

	Whole Sample			High Income Sample		Low Income Sample	
	N	Unique #Firms	%	Unique #Firms	%	Unique #Firms	%
Total	181506	43360		27863		15497	
Firms fully insured all years	92523	23637	54.51	15631	56.09	8006	51.66
Firms self-insured all years	53372	12968	29.91	7658	27.48	5310	34.26
Firms shift to self-insured once	17467	3325	7.67	2185	7.84	1140	7.35
Firms shift to fully insured once	8089	1673	3.86	1126	4.04	547	3.53
Firms shift to fully and back to self	3622	603	1.39	412	1.47	191	1.23
Firms shift to self and back to fully	5178	853	1.97	622	2.23	231	1.49

Table 2: Summary Statistics: Corporate Financial Characteristics

This table provides the firm-year summary statistics of the sample of employer-sponsored health benefits data linked to the Compustat financial database. The sample period covers 2010–2016. The employer sponsored health benefit plan information is matched to Compustat by Employer Identification Number (EIN), excluding any companies with an SIC code that is between 4900 and 4999 or between 6000 and 6999 or above 9000. Firms with negative asset or sales are also dropped.

	N	Mean	Std	p25	p50	p75
Total Asset ($M)	4384	6839.124	26079.48	294.285	982.245	3252.638
Tobin's Q	4384	2.0	1.293	1.183	1.598	2.333
Investment	4384	.048	.055	.017	.031	.057
Cash	4377	.150	.153	.041	.106	.205
Debt Ratio	4376	.234	.244	.018	.187	.345
Dividend	4382	.015	.037	0	0	.019
Sale	4384	1.167	.846	.638	.959	1.466
Operating Profit	4384	.109	.143	.070	.123	.176

Table 3: States Imposed or Revised Stop-loss Deductible Restriction

This table summarizes the states that imposed or revised minimum stop loss insurance deductible requirement between 2011-2016. Data are sourced from National Association of Insurance Commissioners (NAIC) and The National Association of Benefits and Insurance Professionals (NABIP).

State	Year Effective	Individual Deductible Limitation	Aggregate Deductible Limitation
CA	2014	$35,000	Y
CO	2014	$20,000	Y
CT	2014	$20,000	Y
DC	2015	$40,000	Y
LA	2011	$10,000	Y
MD	2015	$22,500	Y
NC	2013	$20,000	Y
OK	2014	$10,000	Y
OR	2014	$10,000	Y
RI	2014	$20,000	Y
UT	2015	$10,000	Y

Table 4: Insurance Premium and Firms' Decision to Self-fund Employer Sponsored Health Benefit Plans

This table presents regression results examining the effect of fully insured premiums on firms' decisions to self-fund employer-sponsored health benefit plans at the firm-year level. Columns (1) and (2) report results from ordinary least squares (OLS) regressions. Columns (3) and (4) present two-stage least squares (2SLS) estimates using a Bartik-style instrument. The Self-Insured indicator equals 1 if the employer offers at least one self-insured or mixed-funded health benefit plan during the plan year. The variable $log(Premium)_{ct}$ s the natural logarithm of the county-level fully insured premium, calculated as the total premiums charged across all fully insured contracts in county c divided by the total number of enrollees in those plans. The instrument, $Predicted\ Share_{st-1}$, is the lagged predicted change in insurer market share at the state level, constructed as the sum of each insurer i's market share in state s in 2009 multiplied by the insurer's national market share growth (excluding state s) in year t. The variable $log(PlanEnrollee)_{it}$ represents the log of the number of participants enrolled in firm i's plan at the end of the plan year. Data on insurer market shares are sourced from the National Association of Insurance Commissioners (NAIC). Employer-sponsored insurance data are obtained from IRS Form 5500 annual filings. Regressions are run at the firm-year level. Standard errors are clustered at the firm level. State, year and firm fixed effects are included. *** indicates significance at the 1% level, ** significance at the 5% level, and * significance at the 10% level.

	OLS		Bartick IV-2SLS	
	SelfInsure	SelfInsure	log(Premium)	SelfInsure
	(1))	(2)	(3)	(4)
$log(Premium)_{ct}$	0.0164**	0.0151**		0.437***
	(2.29)	(2.11)		(3.02)
Predicted Share$_{st-1}$			0.0614***	
			(15.57)	
log(Plan Enrollee)$_{it}$	0.0971***	0.0947***	-0.00680***	0.100***
	(24.75)	(24.84)	(-5.29)	(24.78)
N	175964	175964	175964	175964
R^2	0.8412	0.8413	0.7846	0.8413
Firm FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
County Controls		Y	Y	Y

Table 5: Health Insurer Merger and Firm Decision to Adopt a Self-insured Health Plan

This table presents regression results examining the effect of national health insurance merger on firms' decisions to self-fund employer-sponsored health benefit plans at the firm-year level. Columns (1) and (2) report results from a Diff-in-Diff specification. Columns (3) and (4) present two-stage least squares (2SLS) estimates using the merger as an instrument. The Self-Insured indicator equals 1 if the employer offers at least one self-insured or mixed-funded health benefit plan during the plan year. $Treat_s$ is an indicator equal to 1 if both the acquirer and target insurance firms operated in state s in 2012. $Post_t$ is an indicator equal to 1 for all years beginning in 2014, following the completion of the merger in 2013. The variable $log(Premium)_{ct}$ s the natural logarithm of the county-level fully insured premium, calculated as the total premiums charged across all fully insured contracts in county c divided by the total number of enrollees in those plans. The variable $log(PlanEnrollee)_{it}$ represents the log of the number of participants enrolled in firm i's plan at the end of the plan year. Data on insurer market shares are sourced from the National Association of Insurance Commissioners (NAIC). Employer-sponsored insurance data are obtained from IRS Form 5500 annual filings. Regressions are run at the firm-year level. Standard errors are clustered at the firm level. State, year and firm fixed effects are included. *** indicates significance at the 1% level, ** significance at the 5% level, and * significance at the 10% level.

	OLS		IV-2SLS	
	SelfInsure	SelfInsure	log(Premium)	SelfInsure
	(1))	(2)	(3)	(4)
$Treat_s \times Post_t$	0.0295***	0.0286***	0.0460***	
	(7.95)	(7.62)	(25.74)	
$log(Premium)_{ct}$				0.621***
				(7.62)
$log(Plan\ Enrollee)_{it}$	0.0987***	0.0988***	-0.00665***	0.103***
	(24.74)	(24.79)	(-4.83)	(25.63)
N	171736	171736	171736	171736
R^2	0.8413	0.8414	0.7681	0.8414
Firm FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
County Controls		Y	Y	Y

Table 6: Health Insurer Merger, Insurance Market Concentration and Firm Decision to Adopt a Self-insured Health Plan

This table presents regression results examining the effect of national health insurance merger on firms' decisions to self-fund employer-sponsored health benefit plans at the firm-year level. Columns (1) and (2) report results from a Diff-in-Diff specification. Columns (3) and (4) present two-stage least squares (2SLS) estimates using the merger as an instrument. The Self-Insured indicator equals 1 if the employer offers at least one self-insured or mixed-funded health benefit plan during the plan year. $sim\Delta HHI_s$ is the simulated change in the Herfindahl-Hirschman Index (HHI) induced by the merger, calculated as $sim\Delta HHI_s = (AetnaShare_{s,2012} + CoventryShare_{s,2012})^2 - (AetnaShare_{s,2012}^2 + CoventryShare_{s,2012}^2)$, scaled by 1000. $Post_t$ is an indicator equal to 1 for all years beginning in 2014, following the completion of the merger in 2013. The variable $log(Premium)_{ct}$ s the natural logarithm of the county-level fully insured premium, calculated as the total premiums charged across all fully insured contracts in county c divided by the total number of enrollees in those plans. The variable $log(PlanEnrollee)_{it}$ represents the log of the number of participants enrolled in firm i's plan at the end of the plan year. Data on insurer market shares are sourced from the National Association of Insurance Commissioners (NAIC). Employer-sponsored insurance data are obtained from IRS Form 5500 annual filings. Regressions are run at the firm-year level. Standard errors are clustered at the firm level. State, year and firm fixed effects are included. *** indicates significance at the 1% level, ** significance at the 5% level, and * significance at the 10% level.

	OLS		IV-2SLS	
	SelfInsure	SelfInsure	log(Premium)	SelfInsure
	(1))	(2)	(3)	(4)
$sim\Delta HHI_s \times Post_t$	0.182***	0.157***	0.591***	
	(4.10)	(3.53)	(23.36)	
$log(Premium)_{ict}$				0.266***
				(3.53)
$log(Plan\ Enrollee)_{ict}$	0.0984***	0.0987***	-0.00691***	0.101***
	(24.65)	(24.74)	(-5.00)	(25.05)
N	171736	171736	171736	171736
R^2	0.8412	0.8413	0.7685	0.8413
Firm FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
County Controls		Y	Y	Y

Table 7: Health Insurer Merger and Firm Market Valuation

This table presents the results exploring the impact of a health insurer merger on firms' decisions to adopt self-funded health benefit plans and firm market valuation. Panel A presents the results on firms' decisions to self-fund health benefit plans. Panel B reports the results on firm market valuation, measured by Tobin's Q. Column (1) shows the results for the full sample, while Columns (2)–(4) present the results for subsamples defined by firms' ESI funding types prior to the merger. The Self-Insured indicator equals 1 if the employer only offers self-insured health benefit plan during the plan year. $SelfInsureEnrollee\%$ is a continuous variable characterizing the fraction of enrollees covered by self-insured plans within the firm. $Treat_s$ is an indicator equal to 1 if both the acquirer and target insurance firms operated in state s in 2012. $sim\Delta HHI_s$ is the simulated change in the Herfindahl-Hirschman Index (HHI) induced by the merger, calculated as $sim\Delta HHI_s = (AetnaShare_{s,2012} + CoventryShare_{s,2012})^2 - (AetnaShare^2_{s,2012} + CoventryShare^2_{s,2012})$, scaled by 1000. $Post_t = 1$ after the individual mandate become effective starting 2014. The variable $log(PlanEnrollee)_{it}$ represents the log of the number of participants enrolled in firm i's plan at the end of the plan year. Financial variables are defined in Table A1. Data on insurer market shares are sourced from the National Association of Insurance Commissioners (NAIC). The data for employer-sponsored insurance is from Form 5500 report. Data of corporate financial variables are from Compustat-Fundamentals Annual. State, year and firm fixed effects are included. *** indicates significance at the 1% level, ** significance at the 5% level, and * significance at the 10% level.

Panel A ESI Funding Decision

	SelfInsure	SelfInsureEnrollee%	SelfInsureEnrollee%
	(1)	(2)	(3)
$Treat_s \times Post_t$	0.0526***	0.0339*	
	(2.62)	(1.90)	
$sim\Delta HHI_s \times Post_t$			4.312**
			(2.20)
$log(PlanEnrollee)_{it}$	0.00100	-0.0370	-0.0374*
	(0.06)	(-1.64)	(-1.66)
N	2534	4355	4355
R^2	0.9247	0.8432	0.8432
Firm controls	Y	Y	Y
Firm FE	Y	Y	Y
Year FE	Y	Y	Y
Include mixed insured	N	Y	Y

Panel B: Market Valuation

	TobinQ			
	(1)	(2)	(3)	(4)
	All Sample	Funding Type$_{2013}$ = Fully Insure	Funding Type$_{2013}$ = Mixed-insure	Funding Type$_{2013}$ = Self-insure
$Treat_s \times Post_t$	-0.171***	-0.246***	-0.149**	-0.0543
	(-3.47)	(-2.78)	(-2.04)	(-0.51)
N	4355	1548	1718	1021
R^2	0.8420	0.8229	0.8471	0.8826
Firm controls	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y

Table 8: Health Insurer Merger, Stop-loss Deductible Regulation and Firm Decision to Self-fund Health Benefit Plans

This table presents the results exploring the heterogeneous effects of a health insurance company merger on firms' decisions to self-fund employer-sponsored health benefit plans and the associated impact on firm market valuation. Columns (1)–(2) report the results for firms' decisions to self-fund employer-sponsored health benefit plans. Columns (3)–(5) report the results for firm market valuation. The Self-Insured indicator equals 1 if the employer offers at least one self-insured or mixed-funded health benefit plan during the plan year. $SelfInsureEnrollee\%$ is a continuous variable characterizing the fraction of enrollees covered by self-insured plans within the firm. $Treat_s$ is an indicator equal to 1 if both the acquirer and target insurance firms operated in state s in 2012. $Post_t$ is an indicator equal to 1 for all years beginning in 2014, following the completion of the merger in 2013. $StoplossLimit_{st-1}$ is an indicator equal to 1 if the new stop loss deductible limitation was effective in state s in year $t-1$. The variable $log(PlanEnrollee)_{it}$ represents the log of the number of participants enrolled in firm i's plan at the end of the plan year. Financial variables are defined in Table A1. The data for employer-sponsored insurance is from Form 5500 report. Data of corporate financial variables are from Compustat-Fundamentals Annual. State, year and firm fixed effects are included. *** indicates significance at the 1% level, ** significance at the 5% level, and * significance at the 10% level.

	SelfInsure	SelfInsureEnrollee%	TobinQ		
	(1)	(2)	(3)	(4)	(5)
	Funding Type$_{2013}$ = Fully Insure		Funding Type$_{2013}$ = Fully Insure	Funding Type$_{2013}$ = Self-insure	Funding Type$_{2013}$ = Mixed-insure
$Treat_s \times Post_t \times Stoploss_{st-1}$	-0.116***	-0.122***	0.0196	0.173	-0.545***
	(-3.33)	(-3.71)	(0.07)	(1.23)	(-3.37)
$Treat_s \times Post_t$	0.0461	0.0657*	-0.162*	-0.0833	-0.0813
	(1.15)	(1.91)	(-1.90)	(-0.80)	(-1.30)
$Stoploss_{st-1}$	-0.0682*	-0.0605**	0.110	-0.116	0.115
	(-1.87)	(-2.42)	(0.97)	(-1.01)	(1.25)
$Treat_s \times Stoploss_{st-1}$	0.115	0.169*	-0.434	0.0810	0.211
	(1.38)	(1.96)	(-1.16)	(0.42)	(0.82)
$log(\#Enrollee)_{it}$	0.188***	0.0470	0.0167	0.0386	-0.0235
	(3.65)	(1.41)	(0.18)	(0.61)	(-0.28)
N	1381	1381	1381	902	1494
R^2	0.5991	0.5925	0.8378	0.8919	0.8826
Firm Controls	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y

Table 9: Self-funded Health Benefit Plans, Stop-loss Deductible Regulation and Corporate Investment

This table presents the results examining the impact of state stop-loss insurance deductible regulation on firms' investment decisions. Panel A only includes firms located in states that either newly imposed or revised stop-loss deductible regulations during the sample period. Panel B includes firms in Panel A and firms located in states where no regulatory changes to stop-loss insurance deductibles occurred during the sample period. $Exposure_{cit}$ is a binary indicator equal to 1 if the firm i is affected by the new deductible threshold in year t. Specifically, the firm is classified as treated if they had only one self-insured plan, or a mixed-insured plan with more than 21% of enrollees covered by a self-insured contract, in the year prior to the implementation of the stop-loss deductible restriction. Mixed insured plans that do not report enrollees in different contracts with different funding arrangements are excluded. Financial variables are defined in Table A1. The data for employer-sponsored insurance is from Form 5500 report. Data of corporate financial variables are from Compustat-Fundamentals Annual. Year and firm fixed effects are included. *** indicates significance at the 1% level, ** significance at the 5% level, and * significance at the 10% level.

	Investment			
	(1)	(2)	(3)	(4)
$Exposure_{it-1}$	-0.0160**	-0.0221*	-0.0151**	-0.0190*
	(-2.01)	(-1.88)	(-2.10)	(-1.79)
N	1614	1294	1196	948
R^2	0.7715	0.7615	0.7957	0.7852
Firm Controls	N	N	Y	Y
Firm FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Include Mixed-insured Firm	Y	N	Y	N

Table 10: Stoploss Insurance Deductible Regulation and Other Corporate Policy

This table presents the results examining the impact of state stop-loss insurance deductible regulation on firms' labor hiring, profitability, and cash holding. Panel A only includes firms located in states that either newly imposed or revised stop-loss deductible regulations during the sample period. Panel B includes firms in Panel A and firms located in states where no regulatory changes to stop-loss insurance deductibles occurred during the sample period. $Exposure_{cit}$ is a binary indicator equal to 1 if the firm i is affected by the new deductible threshold in year t. Specifically, the firm is classified as treated if they had only one self-insured plan, or a mixed-insured plan with more than 21% of enrollees covered by a self-insured contract, in the year prior to the implementation of the stop-loss deductible restriction. Mixed insured plans that do not report enrollees in different contracts with different funding arrangements are excluded. Financial variables are defined in Table A1. The data for employer-sponsored insurance is from Form 5500 report. Data of corporate financial variables are from Compustat-Fundamentals Annual. Year and firm fixed effects are included. *** indicates significance at the 1% level, ** significance at the 5% level, and * significance at the 10% level.

	Employment	Profit	Cash
	(1)	(2)	(3)
$Exposure_{it-1}$	-0.0833***	-0.0268*	0.0252*
	(-3.27)	(-1.70)	(1.81)
N	1196	1196	1192
R^2	0.9922	0.8286	0.7651
Firm Controls	Y	Y	Y
Firm FE	Y	Y	Y
Year FE	Y	Y	Y

Table A1: Definition of Health Insurance Variables and Financial Variables

This table presents the definition of health insurance variables and corporate financial variables. The health insurance data are from The Form 5500 Annual Report and Group Health Plan Research File Published by Department of Labor. The accounting data are from the Compustat Daily Updates - Fundamentals Annual. The sample period is from 2011-2016. Foreign companies and companies with a standard industrial classification code that is between 4900 and 4999 or between 6000 and 6999 or above 9000 in Compstat are dropped. Also dropped are the firms with a negative total asset or sales. All total asset terms in the denominators are lagged.

Variable	Definition
	Panel A: Health Insurance Variable from Form 5500 and Group Health Plan Research File
1{SelfInsure}	Equals 1 if variable *ins3* in Group Health Plan Research File equals 0 (self-insure) or 1 (mixed-insure). *ins3* is a variable generated by Department of Labor classifying each health benefit plans into self-insure, fully insure, or mixed-insure.
Total Premium	Variable *tot_prem* in Group Health Plan Research File. The premium for any contract is calculated as the maximum of the following Schedule A line items: total amount of commissions paid, total amount of fees paid, premiums paid to carrier, earned premium, incurred claims, claims charged, total premiums or subscription charges paid to carrier.
#Enrollee	Number of participants as of the end of the plan year. Variable *subtl_act_rtd_sep_cnt* in Form 5500.
	Panel B: Financial Variables from Compustat
Tobin's Q	[Item AT + (Item PRCC × Item CSHO) - Item SEQ - Item TXDB]/Item AT
Employment	Item EMP
Investment	Item CAPX/Item AT
Debt	(Item DLTT+ Item DLC)/Item AT
Cash	Item CH/Item AT
Sale	Item SALE/Item AT
Operating Profit	Item OIBDP/Item AT
Dividend	Item DVC/Item AT

Table A2: Robustness: Multiple Health Insurer Mergers and Firm Decision to Adopt a Self-insured Health Plan

This table presents regression results examining the effect of national health insurance merger on firms' decisions to self-fund employer-sponsored health benefit plans at the firm-year level. Columns (1) and (2) report results from a Diff-in-Diff specification. Columns (3) and (4) present two-stage least squares (2SLS) estimates using the merger as an instrument. The Self-Insured indicator equals 1 if the employer offers at least one self-insured or mixed-funded health benefit plan during the plan year. $Treat_s$ is an indicator equal to 1 if both the acquirer and target insurance firms operated in state s in 2012. $Post_t$ is an indicator equal to 1 for all years beginning in 2014, following the completion of the merger in 2013. The variable $log(Premium)_{ct}$ s the natural logarithm of the county-level fully insured premium, calculated as the total premiums charged across all fully insured contracts in county c divided by the total number of enrollees in those plans. The variable $log(PlanEnrollee)_{it}$ represents the log of the number of participants enrolled in firm i's plan at the end of the plan year. Data on insurer market shares are sourced from the National Association of Insurance Commissioners (NAIC). Employer-sponsored insurance data are obtained from IRS Form 5500 annual filings. Regressions are run at the firm-year level. Standard errors are clustered at the firm level. State, year and firm fixed effects are included. *** indicates significance at the 1% level, ** significance at the 5% level, and * significance at the 10% level.

	OLS			IV-2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
	SelfInsure	SelfInsure	log(Premium)	SelfInsure	log(Premium)	SelfInsure
$Treat_{st-1}$	0.0279***		0.0408***			
	(7.70)		(23.56)			
simΔHHI$_{st-1}$		0.154***			0.594***	
		(3.47)			(23.50)	
$log(Premium)_{ict}$				0.684***		0.260***
				(7.70)		(3.47)
$log(Plan\ Enrollee)_{isct}$	0.0974***	0.0973***	-0.00685***	0.102***	-0.00707***	0.0991***
	(24.85)	(24.80)	(-5.03)	(25.78)	(-5.18)	(25.10)
N	175964	175964	175964	175964	175964	175964
R^2	0.8414	0.8413	0.7721	0.8414	0.7729	0.8413
Firm FE	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
County Controls	Y	Y	Y	Y	Y	Y

Table A3: Robustness: Health Insurance Market Concentration and Fraction of Enrollees Covered by Self-insured Health Plans

This table presents regression results examining the impact of a major health insurer merger on firms' decisions to adopt self-funded health benefit plans. The dependent variable, SelfInsureEnrollee%, is a continuous variable measuring the percentage of a firm's enrollees who are covered by self-insured health plans. Higher values of this variable indicate a greater reliance on self-funding within the firm. $Treat_s$ is an indicator equal to 1 if both the acquirer and target insurance firms operated in state s in 2012. $sim\Delta HHI_s$ is the simulated change in the Herfindahl-Hirschman Index (HHI) induced by the merger, calculated as $sim\Delta HHI_s = (AetnaShare_{s,2012} + CoventryShare_{s,2012})^2 - (AetnaShare_{s,2012}^2 + CoventryShare_{s,2012}^2)$, scaled by 1000. $Post_t$ is an indicator equal to 1 for all years beginning in 2014, following the completion of the merger in 2013. The variable $log(PlanEnrollee)_{it}$ represents the log of the number of participants enrolled in firm i's plan at the end of the plan year. Data on insurer market shares are sourced from the National Association of Insurance Commissioners (NAIC). The data for employer-sponsored insurance is from Form 5500 report. Data of corporate financial variables are from Compustat-Fundamentals Annual. State, year and firm fixed effects are included. *** indicates significance at the 1% level, ** significance at the 5% level, and * significance at the 10% level.

	Bartik IV		Aetna-Coventry Merger		
	IV-2SLS	OLS	IV-2SLS	OLS	IV-2SLS
$Treat_s \times Post_t$		0.0317***			
		(9.05)			
$sim\Delta HHI_s \times Post_t$				0.162***	
				(3.83)	
$log(Premium)_{ct}$	0.548***		0.688***		0.275***
	(6.69)		(9.05)		(3.83)
$log(Plan\ Enrollee)_{it}$	0.0173***	0.0144***	0.0190***	0.0143***	0.0162***
	(4.54)	(4.02)	(5.24)	(3.98)	(4.48)
N	151871	171736	171736	171736	171736
R^2	0.8490	0.8372	0.8372	0.8370	0.8370
Firm FE	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y
County Controls	Y	Y	Y	Y	Y

Table A4: Health Insurer Merger and Labor Hiring

This table presents the results exploring the impact of a health insurer merger on firms' labor hiring decisions. Column (1) shows the results for the full sample, while Columns (2)–(4) present the results for subsamples defined by firms' ESI funding types prior to the merger. $Treat_s$ is an indicator equal to 1 if both the acquirer and target insurance firms operated in state s in 2012. Financial variables are defined in Table A1. The data for employer-sponsored insurance is from Form 5500 report. Data of corporate financial variables are from Compustat-Fundamentals Annual. Year and firm fixed effects are included. *** indicates significance at the 1% level, ** significance at the 5% level, and * significance at the 10% level.

	log(Employee)			
	(1)	(2)	(3)	(4)
	All Sample	Funding Type$_{2013}$ = Fully Insure	Funding Type$_{2013}$ = Mixed-insure	Funding Type$_{2013}$ = Self-insure
$Treat_s \times Post_t$	-0.0339***	-0.0588**	-0.0227	-0.0150
	(-2.89)	(-2.42)	(-1.35)	(-0.72)
N	3685	1276	1559	850
R^2	0.9939	0.9913	0.9929	0.9905
Firm controls	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y

Table A5: Placebo: Health Insurer Merger, Self-Funded Health Benefit Plans and Firm Financial Decisions

This table presents the results of placebo test by randomly assigning the treatment states. Columns (1)–(2) report the results for firms' decisions to self-fund employer-sponsored health benefit plans. Columns (3)–(6) report the results for firm market valuation. Columns (7)–(10) report the results for firm labor hiring decision. The Self-Insured indicator equals 1 if the employer offers at least one self-insured or mixed-funded health benefit plan during the plan year. $SelfInsureEnrollee\%$ is a continuous variable characterizing the fraction of enrollees covered by self-insured plans within the firm. $Treat'_s$ is an indicator equal to 1 if the state is randomly assigned as a treatment state. $Post_t$ is an indicator equal to 1 for all years beginning in 2014, following the completion of the merger in 2013. The variable $log(PlanEnrollee)_{it}$ represents the log of the number of participants enrolled in firm i's plan at the end of the plan year. Financial variables are defined in Table A1. The data for employer-sponsored insurance is from Form 5500 report. Data of corporate financial variables are from Compustat-Fundamentals Annual. State, year and firm fixed effects are included. *** indicates significance at the 1% level, ** significance at the 5% level, and * significance at the 10% level.

	SelfInsure	SelfInsure Enrollee%	TobinQ				log(Emp)			
			All Sample	Funding Type$_{2013}$ = Fully Insure	Funding Type$_{2013}$ = Mixed Insure	Funding Type$_{2013}$ = Self-insure	All Sample	Funding Type$_{2013}$ = Fully Insure	Funding Type$_{2013}$ = Mixed Insure	Funding Type$_{2013}$ = Self-insure
$Treat'_s \times Post_t$	-0.00917	-0.0270	-0.00626	0.0132	-0.0817	0.163	-0.0104	-0.00903	-0.0233	0.00897
	(-0.58)	(-1.60)	(-0.12)	(0.14)	(-1.09)	(1.61)	(-0.65)	(-0.32)	(-1.00)	(0.27)
N	4355	4355	4355	1548	1718	1021	4348	1547	1713	1020
R^2	0.8764	0.8426	0.8411	0.8216	0.8464	0.8833	0.9926	0.9894	0.9909	0.9881
Corporate controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table A6: Heterogeneous Effect of Health Insurer Merger and Stop-loss Deductible Regulation on Market Valuation of Firms

This table presents the results exploring the heterogeneous effects of a health insurance company merger on firms' decisions to self-fund employer-sponsored health benefit plans and the associated impact on firm market valuation. Columns (1)–(2) report the results for firms' decisions to self-fund employer-sponsored health benefit plans. Columns (3)–(5) report the results for firm market valuation. The Self-Insured indicator equals 1 if the employer offers at least one self-insured or mixed-funded health benefit plan during the plan year. $SelfInsureEnrollee\%$ is a continuous variable characterizing the fraction of enrollees covered by self-insured plans within the firm. $sim\Delta\text{HHI}_s$ is the simulated change in the Herfindahl-Hirschman Index (HHI) induced by the merger, calculated as $sim\Delta HHI_s = (AetnaShare_{s,2012} + CoventryShare_{s,2012})^2 - (AetnaShare_{s,2012}^2 + CoventryShare_{s,2012}^2)$, scaled by 1000. $Post_t$ is an indicator equal to 1 for all years beginning in 2014, following the completion of the merger in 2013. $StoplossLimit_{st-1}$ is an indicator equal to 1 if the new stop loss deductible limitation was effective in state s in year $t-1$. The variable $log(PlanEnrollee)_{it}$ represents the log of the number of participants enrolled in firm i's plan at the end of the plan year. Financial variables are defined in Table A1. The data for employer-sponsored insurance is from Form 5500 report. Data of corporate financial variables are from Compustat-Fundamentals Annual. State, year and firm fixed effects are included. *** indicates significance at the 1% level, ** significance at the 5% level, and * significance at the 10% level.

	SelfInsure	SelfInsureEnrollee%	TobinQ		
	(1)	(2)	(3)	(4)	(5)
	Funding Type$_{2013}$ = Fully Insure		Funding Type$_{2013}$ = Fully Insure	Funding Type$_{2013}$ = Self-insure	Funding Type$_{2013}$ = Mixed-insure
$sim\Delta\text{HHI}_s \times Post_t \times Stoploss_{st-1}$	-3.963***	-3.746***	-3.042	5.969	-25.50***
	(-3.73)	(-4.38)	(-0.25)	(0.96)	(-3.74)
$sim\Delta\text{HHI}_s \times Post_t$	-0.160	0.0978	-0.0513	-0.367	0.310
	(-0.50)	(0.32)	(-0.06)	(-0.16)	(0.32)
$Stoploss_{st-1}$	-0.0926**	-0.0851***	0.153	-0.0864	0.125
	(-2.54)	(-3.49)	(1.39)	(-0.79)	(1.32)
$sim\Delta\text{HHI}_s \times Stoploss_{st-1}$	8.761*	11.01**	-23.41	5.551	11.16
	(1.85)	(2.46)	(-1.24)	(0.64)	(1.12)
$log(\text{Plan Enrollee})_{it}$	0.186***	0.0446	0.0247	0.0410	-0.0295
	(3.66)	(1.43)	(0.27)	(0.65)	(-0.35)
N	1381	1381	1381	902	1494
R^2	0.5988	0.5902	0.8371	0.8917	0.8819
Firm Controls	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y

Appendix B: Regulation in Employer-sponsored Health Insurance Market and Stop Loss Insurance

The legal framework governing employee benefit plans is established by the Employee Retirement Income Security Act (ERISA) of 1974. Under this framework, fully insured health plans and the insurers that provide coverage are subject to comprehensive state regulation. This includes rating and benefit standards, oversight of insurers' compliance, and monitoring of financial solvency. Common forms of state-based regulation include coverage mandates for specific services (e.g.,fertility treatments and autism spectrum therapies), provider mandates (e.g., inclusion of nurse practitioners and chiropractors), financial reserve requirements, and premium taxes. By contrast, self-funded employer health benefit plans are exempt from state insurance regulation. This exemption is rooted from ERISA's "deemer clause," which prohibits states from classifying self-funded employers as insurers. As a result, self-insured plans are subject only to federal requirements under ERISA. However, this exemption does not extend to stop-loss insurance policies that self-insured employers often purchase to limit their financial exposure; such policies remain subject to state regulation. Unlike insurers, self-insured employers are not subject to licensing, financial solvency requirements, or regulatory capital standards. Furthermore, self-funded health benefit plans are generally not bound by the minimum coverage mandates that apply to fully insured policies.

Employers must make several critical decisions when establishing and administering a self-insured health benefit plan. One of the most important is the contract with the third-party administrator (TPA), which specifies the scope of services to be provided. Another key decision involves the stop-loss insurance policy, where the employer determines the level of financial risk to retain and selects an insurer accordingly. Employers must also decide which benefits will be covered under the plan. While TPAs often assist with plan design and regulatory compliance, the employer remains the ultimate fiduciary and is legally responsible for any violations. If a TPA error causes the plan to fall out of compliance with the Employee Retirement Income Security Act (ERISA), the Health Insurance Portability and Accountability Act (HIPAA), or the Affordable Care Act (ACA), the plan may be subject to regulatory penalties or selected for a random audit. Therefore, the TPA contract must address several critical administrative responsibilities, including

the entity responsible for creating and distributing the Summary Plan Description (SPD), plan documents, and required notices.

Stop-loss insurance is a highly specialized line of coverage that differs fundamentally from traditional health insurance. In contrast to health insurance—where the insurer provides direct financial protection to enrollees—stop-loss insurance protects the employer, not the employees enrolled in the self-funded health benefit plan. In other words, employees rely on their employer for the payment of medical claims, not the stop-loss insurer. Although stop-loss insurance is often compared to reinsurance, the two serve distinct purposes: reinsurance protects licensed insurers from excessive liabilities under insurance policies, whereas stop-loss insurance protects self-insured employers from exceptionally high medical claims. While stop-loss coverage plays a critical role in shielding employers from catastrophic losses, it may also be leveraged for regulatory arbitrage. Specifically, a stop-loss policy with sufficiently low attachment points can functionally resemble a fully insured plan—where total costs are divided among TPA fees, stop-loss premiums, and a medical claims reserve—but without being subject to state-level insurance regulation. To illustrate how stop loss insurance deductible works and how does the minimum deductible limitation fit in, consider the numerical example: Suppose an employer has 100 employees enrolled in a self-funded health benefit plan with a $25000 individual deductible and a $1 million aggregate deductible.

Scenario 1: one employee has a premature baby with expenses $1.5 million. Then the employer is responsible for $25000 and the stop-loss insurer pays $1.475 million.

Scenario 2: The total amount of medical bills incurred by 100 employees under individual deductible is $1.1 million in a single year. Then the employer is reimbursed $100,000 given the aggregate deductible.

As discussed in Section 2, many states set thresholds for stop-loss attachment points with the aim of establishing risk transfer standards. Table B1 summarizes the details of the minimum deductible requirements across states. Take the District of Columbia as an example: In Scenario 1, the passage of a stop-loss deductible regulation would result in an additional cost of $15,000 for the employer for this individual employee. In Scenario 2, if the claim is incurred at the expected level, the employer would be responsible for covering the entire claim amount.

Table B1: State Regulation of Minimum Stop-loss Deductible (2011-2016)

State	Description
California	Shall not contain (a). An individual attachment point for a policy year that is less than thirty-five thousand dollars ($35,000). (b). An aggregate attachment point for a policy year that is less than the greater of one of the following: (1) Five thousand dollars ($5,000) times the total number of group members. (2) One hundred twenty percent of expected claims. (3) Thirty-five thousand dollars ($35,000).
Colorado	Prohibits specific deductible limits below $20,000. Prohibits aggregate coverage attachment points of less than $20,000 per person, or 120% of expected claims, whichever is greater
Connecticut	Shall not (a). Has an annual attachment point for claims incurred per individual that is lower than $20,000; (b). Has an annual aggregate attachment point for groups of fifty (50) or fewer, that is lower than the greater of: (1) $4,000 times the number of group members; (2) 120 percent of expected claims; or (3) $20,000. (c). Has an annual aggregate attachment point for groups of fifty-one (51) or/more that is lower than 110 percent of expected claims.
District of Columbia	Shall not (a) An individual attachment point for a policy year that is less than $40,000. (b) An aggregate attachment point for a policy year that is less than the greater of one of the following: (i) Five thousand dollars times the total number of group members; (ii) One hundred twenty percent of expected claims; or (iii) Forty thousand dollars.
Louisiana	The specific stop-loss or excess limit or attachment point per individual claimant shall be at least ten thousand dollars. The aggregate stop-loss or excess limit or attachment point for groups of fifty or fewer shall be, at a minimum, one hundred twenty percent of the group health plan's total expected claims per policy period. The aggregate stop-loss or excess limit or attachment point for groups of fifty-one or more shall be, at a minimum, one hundred ten percent of the group health plan's total expected claims per policy period.
Maryland	Shall not issue any contract with (i) a specific attachment point of less than $22,500; or (ii) an aggregate attachment point of less than 120% of expected claims.
North Carolina	Shall not (a). Has an annual attachment point for claims incurred per individual that is lower than twenty thousand dollars ($20,000) for plan years beginning in 2013. (b). Has an annual aggregate attachment point lower than the greater of one of the following: 1. One hundred twenty percent (120%) of expected claims. 2. Twenty thousand dollars ($20,000) for plan years beginning in 2013.
Oklahoma	The individual stop-loss amount, (i.e. retention or attachment point), must be at least $10,000. The aggregate stop-loss amount, (i.e. retention or attachment point), shall be, at a minimum, 120% of expected paid claims.
Oregon	If the policy establishes an aggregate attaching point or retention, the point or retention must not be less than 120 percent of the expected claims; If the policy establishes an attaching point or retention applicable to each individual covered by the plan, the point or retention must not be less than $10,000.
Rhode Island	An insurer shall not issue a stop-loss insurance policy that: (1) Has an annual attachment point for claims incurred per individual that is lower than twenty thousand dollars ($20,000); (2) Has an annual aggregate attachment point that is lower than one hundred twenty percent (120%) of expected claim.
Utah	Shall (i) have an annual specific attachment point that is at least $25,000; and (ii) have an annual aggregate attachment point that may not be less than 90% of expected claims.

Appendix C: Form 5500 Dataset and Funding Type Classification

The Employee Retirement Income Security Act (ERISA) and the Internal Revenue Code (IRC) establish key disclosure and reporting requirements for private-sector employee benefit plans. To facilitate compliance with these mandates, the Department of Labor (DOL), the Internal Revenue Service (IRS), and the Pension Benefit Guaranty Corporation (PBGC) jointly developed the Form 5500 series in 1975. Employers are required to submit multiple forms under the ERISA and IRC reporting framework. For the purposes of this research, the most relevant components are the main Form 5500, Schedule A (Insurance Information), and Schedule H (Financial Information). The main form includes key administrative details such as the plan year, sponsor location, number of covered individuals, type of benefit plan, and the plan's funding arrangement. Funding arrangements may take the form of insurance contracts, trusts, or general assets. Schedule A provides detailed information on any insurance contracts associated with the plan, including the identity of the insurance carrier, fees and commissions paid, the type of insurance contract, and premium payments. Contract types disclosed in this schedule span a range of products, including health, life, dental, vision, stop-loss, and disability insurance. Schedule H must be filed when a plan is funded through a trust. This schedule contains financial disclosures such as the trust's balance sheet and cash flow information.

Each year the Department's Employee Benefits Security Administration's (EBSA) Office of Policy and Research (OPR) creates The Form 5500 Group Health Plans Research File, consisting of all employer-sponsored private-sector welfare plans that are required to file a Form 5500 Annual Return/Report, in order to analyze the group health plans market. The edited sample dropped records of DFEs, voluntary filing plans, and duplicate filings. Based on the information in Schedule A and Schedule H, The Form 5500 Group Health Plans Research File classifies wach benefit plan into fully insure, self-insure or mixed insure. In general, the plan is defined as self-insure if the plan does not include information on a health insurance policy or contract in any Schedule A filed as part of the Form 5500. For classification purposes, Schedule A insurance contracts are not considered health insurance policies or contracts if the per capita premium amount reported is less than \$1,800 or the filing also indicates that the policy could be for stop-loss coverage

or for payments to a TPA. The filing must also either: (a) indicate the plan is funded through a trust or general assets of the sponsor, (b) include a Schedule H or Schedule I and report benefit payments, (c) be filed on the Form 5500-SF and report non-zero total assets, liabilities, or net assets or (d) be filed on the Form 5500-SF with fewer than 100 participants as of the beginning of the plan year and report zero total assets, liabilities, and net assets with a non-zero amount for income or expenses. The plan is defined as mixed insure if the plan does not meet the requirements for self-insure and either (a) the number of individuals covered under insurance contracts as reported on the Schedule A is less than half of the total number of participants as of the end of the plan year, and the filing indicates that the plan is funded through a trust or general assets of the sponsor, or (b) the filing has an attached Schedule H that indicates benefit payments directly to participants or beneficiaries, or (c) the filing has an attached Schedule H that indicates benefit payments but does not indicate benefit payments directly to participants or beneficiaries and both i) Premiums paid for all insurance contracts as reported on the Schedule A are not within 10% of total payments to insurance carriers for the provision of benefits as reported on Schedule H, and ii) Premiums paid for all health insurance contracts as reported on the Schedule A are not within 10% of total payments to insurance carriers for the provision of benefits as reported on Schedule H, or (d) the filing has an attached Schedule I that indicates benefit payments and both i) Premiums paid for all insurance contracts as reported on the Schedule A are not within 10% of total benefits paid as reported on Schedule I, and ii) Premiums paid for all health insurance contracts as reported on the Schedule A are not within 10% of total benefits paid as reported on Schedule I. The plan is classified as fully insure if not self-insure or mixed insure. I them merge files containing the funding type classification to the Form 5500 dataset using the form ID. I keep the health benefit plans and dropped other plans such as life insurance, disability insurance, and standalone dental or vision plans. I aggregate plan-level information to firm-year level using Employer Identification Numbers ("EIN") reported in Form 5500.