Organizational Form and Regulatory Compliance: Evidence from Medical Loss Ratio Regulation

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Abstract

I study how organizational form affects regulatory compliance using the Affordable Care Act's 80 percent medical loss ratio (MLR) requirement. Using a triple-differences design that exploits variation in insurers' pre-regulation compliance gaps, I find that traditional insurers' post-regulation increases in MLR scale strongly with the size of their initial compliance gaps. Vertically integrated insurers instead exhibit a positive post-regulation shift in MLR but a substantially weaker relationship between that increase and initial regulatory pressure. The differential response is concentrated in reported claims and is not accompanied by a commensurate expansion in observable utilization or changes in quality-improvement or administrative expenses. These patterns are consistent with adjustment through affiliated-provider payments, including internal transfer pricing, although the data do not directly observe transaction-level prices. The results show that organizational form shapes the margins through which firms respond to spending-based regulation and, consequently, how regulatory compliance should be interpreted.

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1 Introduction

Many regulations condition payments, penalties, or permissible profits on firms' reported expenditures. The effectiveness of such policies depends on how closely reported spending reflects the underlying economic activity that regulators intend to encourage. This mapping may depend on organizational form. When firms transact at arm's length, reported expenditures reflect prices negotiated between separate entities. When the buyer and seller are under common ownership, the same reported expenditure may instead reflect an internally determined transfer price. Vertical integration can therefore change the set of margins along which firms respond to spending-based regulation.

I study this idea using the Affordable Care Act's medical loss ratio (MLR) requirement, a central regulation in health insurance markets where firm behavior and competition have important welfare consequences (Gaynor and Starc, 2026). Beginning in 2011, individual-market insurers were required to devote at least 80 percent of adjusted premium revenue to medical claims and qualifying quality-improvement expenditures or rebate the difference to consumers. The regulation therefore created a direct incentive for insurers below the threshold to increase their reported MLR. For a traditional insurer, increasing claims generally requires greater payments to independent providers, changes in utilization or service mix, or other qualifying expenditures. Vertically integrated insurers, however, transact with affiliated providers. A higher payment from the insurance arm to the provider arm increases reported medical claims while simultaneously increasing revenue elsewhere within the same organization. Integration may therefore provide an additional compliance margin through transactions whose prices are determined within the same organizational system rather than through arm's-length bargaining.

Importantly, common ownership does not imply that affiliated-provider transactions are inefficient or strategically manipulated. Vertical integration may improve coordination, reduce transaction costs, or facilitate the delivery of lower-cost or higher-quality care (Dafny et al., 2012; Baker et al., 2014; Ho and Lee, 2017; Dafny et al., 2019; Koch et al., 2021). At

the same time, when regulatory compliance depends on the dollar value of transactions between affiliated entities, integration creates discretion over an accounting quantity that would otherwise be determined through arm's-length bargaining. Whether this organizational difference changes firms' measured response to the same regulatory incentive is therefore an empirical question.

The MLR regulation provides a useful setting in which to study this question because the strength of the regulatory incentive varies across firms. Insurers that began farther below the 80 percent threshold faced a larger compliance gap and therefore greater regulatory pressure. If the marginal adjustment required for compliance occurs through arm's-length medical spending, reported MLR changes should increase with the size of the initial shortfall: an insurer starting at a 60 percent MLR requires a substantially larger adjustment than one starting at 79 percent. Vertical integration introduces an additional margin because some medical claims reflect payments to affiliated providers. If adjustment through these affiliated transactions is important, the relationship between the initial regulatory shortfall and subsequent reported MLR changes may differ across organizational forms.

I test this prediction using National Association of Insurance Commissioners (NAIC) regulatory filings for individual-market insurers from 2001 through 2024. I exploit each issuer's pre-regulation distance below the 80 percent threshold as a continuous measure of regulatory pressure and estimate a triple-differences specification comparing the relationship between this compliance gap and post-ACA MLR changes for traditional and vertically integrated insurers. This design builds on Cicala et al. (2019), who show that insurers below the MLR threshold substantially increased reported medical spending following implementation of the regulation. I ask whether the magnitude of that response depends on organizational form.

I find a sharp difference in how reported MLR responds to regulatory pressure across organizational forms. Among traditional insurers, post-ACA increases in MLR scale strongly with the size of the pre-regulation compliance gap: the preferred estimate implies that traditional insurers close approximately 70 percent of their initial gaps. Vertically integrated

insurers instead exhibit a sizable positive post-ACA shift in MLR but a much weaker relationship between that increase and the initial compliance gap. The estimated compliance-gap slope is 0.699 among traditional insurers and 0.043 among vertically integrated insurers. Thus, the distinguishing feature of the integrated-insurer response is not an absence of adjustment following the regulation, but that the magnitude of the adjustment is largely unrelated to the amount of initial regulatory pressure.

I next examine the margins underlying this differential response. The difference between vertically integrated and traditional insurers is concentrated in reported incurred claims rather than quality-improvement or administrative expenses. At the same time, the differential increase in reported MLR is not accompanied by a commensurate expansion in observable utilization. These patterns are consistent with adjustment through payments to affiliated providers, including internal transfer pricing, rather than the expense-reclassification channels emphasized in prior work (Born et al., 2023; Eastman et al., 2021). However, the regulatory filings do not report transaction-level prices and therefore do not uniquely identify this mechanism. IRS Form 990 filings provide complementary evidence on related-party financial flows. For Geisinger Health Plan, the gap-positive VI issuer with the largest pre-regulation compliance gap, intercompany shared-services revenue increased by 80 percent between FY2009 and FY2011, compared with 12.7 percent growth in premiums. These filings document substantial changes in intercompany financial flows around implementation of the MLR rule, but do not identify unit transfer prices or establish that these changes were caused by the regulation.

The paper contributes to three literatures. First, this paper contributes to the literature on regulation and strategic firm behavior by showing that organizational form shapes firms' responses to a common regulatory incentive. Existing work documents behavioral responses to the MLR threshold and accounting strategies used to increase reported medical spending (Abraham et al., 2014; Born et al., 2023; Callaghan et al., 2020; Cicala et al., 2019; Eastman et al., 2021; Karaca-Mandic et al., 2015). More broadly, firms respond strategically to health

care payment and reporting rules through upcoding, overbilling, and other changes in reported activity (Dafny, 2005; Geruso and Layton, 2020; Eliason et al., 2025; Leder-Luis and Malani, 2025). Relatedly, Gupta et al. (2026) show that ownership type can influence both firms' propensity to exploit payment rules and the use of the resulting revenues. I show that the organizational boundary of the firm can shape the relationship between regulatory pressure and the expenditures used to measure compliance.

Second, the paper contributes to a growing literature on related-party transactions and transfer pricing in health care. Gandhi and Olenski (2024) show that common ownership facilitates the movement of profits through related-party transactions in nursing homes, while contemporaneous and independent work by Kakani et al. (2026) documents transfer pricing by vertically integrated insurers in Medicare Part D. I study a distinct regulatory setting and exploit variation in the strength of the MLR incentive to show that the relationship between regulatory pressure and reported spending differs sharply with organizational form. The concentration of this differential response in reported claims, together with the absence of commensurate changes in observable utilization, provides evidence consistent with affiliated-provider payments as one mechanism through which organizational form can shape regulatory response.

Third, the findings add a regulatory dimension to the economics of vertical integration in health care. Existing work primarily examines how integration affects bargaining, prices, referrals, utilization, and competition (Dafny et al., 2012; Baker et al., 2014; Ho and Lee, 2017; Dafny et al., 2019; Koch et al., 2021). The results here highlight a different consequence of moving transactions inside the firm: organizational boundaries can change how regulation operates. When compliance is based on reported expenditures, otherwise identical regulatory rules may induce different economic responses depending on whether the relevant transactions occur across or within firm boundaries.

The findings have implications beyond the ACA's MLR requirement. Spending-based regulations are common because expenditures are observable and can be audited. But when

regulated firms transact with affiliated entities, reported spending may reflect internally determined prices as well as underlying resource use. The findings have implications beyond the ACA's MLR requirement. Spending-based regulations are common because expenditures are observable and can be audited. But when regulated firms transact with affiliated entities, the economic meaning of reported spending may depend on how those transactions are organized and priced. Identical regulatory thresholds may therefore induce different underlying adjustments across organizational forms. Understanding regulatory effectiveness requires attention to both the incentives created by policy and the organizational structures through which firms respond.

The remainder of the paper proceeds as follows. Section 2 describes the MLR provision and insurer-provider vertical integration. Section 3 presents the data and identification strategy. Section 4 presents the main results. Section 5 examines mechanism evidence, and Section 6 presents the event study. Section 7 reports robustness analyses. Section 8 discusses interpretation, limitations, and policy implications. The final section concludes.

2 Institutional Background

2.1 The ACA's Medical Loss Ratio Provision

The individual market serves consumers who purchase health insurance directly rather than through an employer, including self-employed individuals, workers at firms that do not offer coverage, and those who obtain coverage through the ACA's health insurance exchanges.

Prior to the ACA, individual-market insurers faced limited federal constraints on the allocation of premium revenue between medical spending and administrative costs. Beginning in 2011, the ACA required insurers to maintain an 80 percent medical loss ratio (MLR) or rebate premiums to enrollees. The provision was binding for many issuers and produced substantial compliance convergence (Cicala et al., 2019).

The regulatory formula defines the medical loss ratio (MLR) as incurred claims plus quality

improvement (QI) expenses divided by earned premiums net of taxes. Administrative expenses, including claims processing, marketing, and profit, do not count toward the numerator. This structure creates two gaming channels relevant to the analysis. First, an insurer can increase reported claims through higher provider payments, even if care volume is unchanged; this is the channel studied. Second, an insurer can reclassify administrative expenses as QI activities; prior work documents evidence of this channel (Born et al., 2023; Eastman et al., 2021).[1]

Enforcement is administered through annual NAIC financial filings at the state-market segment level. The regulation applies to fully insured coverage; self-insured employer plans are excluded.

A structural feature of the compliance framework creates an asymmetry between vertically integrated and traditional insurers. The implementing regulation (45 CFR Part 158, 75 FR 74921) defines incurred claims as direct payments to providers for covered clinical services but does not impose an explicit arm's-length pricing requirement for payments to affiliated providers. Consequently, payments between affiliated insurer and provider entities can enter reported claims even though the underlying price is determined within the integrated organization.

2.2 Vertical Integration in Health Insurance Markets

Vertical integration between health insurers and health care providers takes several organizational forms in the US market. Provider-sponsored health plans, the form studied here, are insurance entities whose parent organization is a health care delivery system. These include fully integrated delivery systems such as Kaiser Permanente, hospital-system-affiliated plans such as UPMC Health Plan and Geisinger Health Plan, and physician-group-affiliated plans that bundle primary care delivery with insurance coverage. Vertically integrated insurers represent a substantial share of individual market activity.[2]

[1]The large group market threshold is 85 percent.

[2]The provider arms of VI systems in the sample are predominantly nonprofit hospital systems required to file Form 990 Schedule H with the IRS reporting community benefit expenditures. Although this creates

The central economic feature of insurer-provider integration is the elimination of arms'-length bargaining over provider payment rates. A traditional (non-integrated) insurer must negotiate prices with independent hospitals and physician groups in an external market, resulting in rates that reflect provider market power, network design, and utilization management (Ho and Lee, 2017). A vertically integrated insurer transacts with an affiliated provider rather than an independent one, so the price at which the insurer arm compensates the provider arm is an internal transfer price determined within the integrated organization rather than through market negotiation.[3]

The distinction matters because compliance under the MLR rule depends on reported claims spending. A traditional insurer seeking to increase its MLR must negotiate higher payment rates with independent providers, expand utilization, or both. These responses generally impose real economic costs and should scale with the size of the compliance gap. A vertically integrated insurer, by contrast, can adjust the transfer price paid to owned providers. [4] Because payments to affiliated providers count as medical claims under the MLR formula, higher transfer prices increase reported claims spending even when the volume and quality of care remain unchanged.

This organizational difference generates two empirical predictions. First, if transfer pricing is an important compliance technology, vertically integrated insurers' responses should be largely independent of the size of their compliance gaps. Second, prior to the ACA, when there was no regulatory incentive to maintain high reported claims, insurers with larger future compliance gaps should report systematically lower claims if the same transfer-pricing mechanism operated in reverse. Both predictions differ from explanations based solely on

an additional layer of financial reporting scrutiny, the IRS community benefit standard evaluates whether the hospital provides sufficient charitable activities to justify tax-exempt status, not whether intercompany payments between the insurance and provider arms reflect arms-length market rates. The MLR compliance gap therefore persists across all regulatory frameworks applicable to these entities.

[3]The use of internal transfer prices to shift reported income across regulatory or tax boundaries is well documented in the corporate taxation literature. Recent evidence suggests similar mechanisms may operate in health care markets (Kakani et al., 2026).

[4]Recent policy commentary has raised concerns about intercompany transactions between insurers and affiliated providers (Angeles and Bailit, 2025; Argüello and Murphy, 2025).

efficiency gains or care coordination.

3 Data and Identification Strategy

3.1 Data

The primary data source is the NAIC Exhibit of Premiums, Enrollment and Utilization, which covers all individual comprehensive health insurance issuers from 2001 through 2024. The exhibit reports premium revenue, medical claims, enrollment, ambulatory encounter rates, and inpatient admission rates at the issuer-state-year level. I restrict to the individual comprehensive market throughout, excluding Medicare supplement, dental, vision, and short-term limited duration policies.

I classify an insurer as vertically integrated if its organizational parent includes a health care delivery system rather than a standalone insurance organization. I construct the classification using NAIC company names and a manually verified issuer crosswalk, with ambiguous cases reviewed individually. I then validate the classification against NAIC Schedule Y holding-company filings, which report legal relationships among entities within an insurance holding-company system. The resulting classification identifies 24 vertically integrated issuer cocodes, all of which are confirmed through Schedule Y ownership records.[5]

The primary outcome is the annual medical loss ratio (MLR). The ACA determines rebate obligations using a three-year averaging procedure, whereas I use annual MLR to measure changes in reported medical spending relative to premiums following implementation of the regulation.[6] I also construct medical claims and premiums per member-month, average claims spending per observed unit of utilization, and log enrollment. Additional covariates include indicators for nonprofit status, HMO organizational form, and Blue Cross Blue Shield

[5]Appendix A describes the classification procedure and Schedule Y validation in greater detail.

[6]The empirical analysis focuses on annual MLR because the objective is to measure year-to-year changes in insurer reporting and spending behavior. The statutory rebate calculation instead incorporates multiple years of experience and therefore smooths these annual adjustments.

affiliation, as well as a state-level Herfindahl–Hirschman Index.

The vertically integrated insurers in the sample are primarily long-standing insurer-provider relationships that predate implementation of the ACA. The analysis therefore captures established integrated delivery systems rather than the more recent forms of insurer-provider integration arising from acquisitions of physician practices and other health care businesses. This distinction is important for interpreting the external validity of the estimates but does not require integration itself to have been caused by the MLR regulation.[7]

The analysis sample is restricted to issuer-state panels observed in 2010, the year immediately preceding implementation of the MLR requirement and the year used to construct each issuer's pre-regulation compliance gap. This restriction ensures that treatment intensity is defined using a common pre-regulation year. It excludes 2,370 issuer-state-year observations (41%), primarily from post-ACA entrants and issuers without a 2010 filing. Relative to the estimation sample, excluded observations are less likely to be vertically integrated (9.4% versus 15.2%), have lower median enrollment (11,600 versus 20,500 life-years), and are disproportionately associated with post-2014 entrants. The resulting sample contains 3,380 issuer-state-year observations representing 204 unique issuer-state pairs over 2001–2024.

The NAIC introduced reporting of qualifying quality-improvement expenses around implementation of the MLR requirement, creating a change in the available spending components across the pre- and post-regulation periods. The main analysis therefore uses the consistently available MLR, claims, premium, enrollment, and utilization measures. Analyses that decompose reported spending into claims, quality-improvement, and administrative components use the Supplemental Health Care Exhibit and are presented separately in Section 5.

Table 1 reports descriptive statistics for the main sample. Vertically integrated insurers have higher average reported MLRs than traditional insurers (0.939 versus 0.861) and lower average ambulatory encounter rates (6.5 versus 8.6 per life-year). These differences are descriptive and may reflect persistent differences in organizational structure, market

[7]Appendix Figure A1 presents annual premium volume by insurer group in 2019.

participation, enrollee composition, or other insurer characteristics.

3.2 Identification Strategy

The empirical strategy exploits cross-sectional variation in insurers' pre-regulation distance from the 80 percent MLR threshold. Following Cicala et al. (2019), I define each issuer's pre-regulation compliance gap as

$$dist_below80_i = \max\big(0,\ 0.80 - MLR_{i,2010}\big) \tag{1}$$

This measure equals zero for issuers already at or above the regulatory threshold in 2010 and increases with the size of the shortfall for issuers below the threshold. Because the measure is defined using the 2010 MLR, it is time-invariant and enters the estimating equation through interactions with post-ACA timing and vertical-integration status.

I estimate the following continuous-treatment triple-differences model:

$$\begin{aligned} MLR_{ist} = {} & \beta_1(dist \times post)_{it} + \beta_2(dist \times post \times VI)_{it} + \beta_3(dist \times VI)_i \\ & + \beta_4(post \times VI)_{it} + \gamma_i + \lambda_t + \delta_i t + X'_{ist}\pi + \varepsilon_{ist}, \end{aligned} \tag{2}$$

where γ_i are issuer-state fixed effects, λ_t are year fixed effects, and $\delta_i t$ are issuer-specific linear trends. X_{ist} contains time-varying controls described above. Standard errors are clustered at the issuer level.

The coefficient β_1 captures the relationship between regulatory pressure and post-ACA MLR changes among traditional insurers. It extends the empirical framework in Cicala et al. (2019): a positive β_1 implies that traditional insurers with larger pre-regulation shortfalls increase their MLRs by more following implementation.

The key coefficient is β_2, which measures whether this relationship differs for vertically integrated insurers. A negative β_2 implies that the MLR response of vertically integrated insurers increases less with the size of the compliance gap than the response of traditional

insurers. The implied response to regulatory pressure among vertically integrated insurers is therefore $\beta_1 + \beta_2$. A relatively small value of $\beta_1 + \beta_2$ is consistent with a compliance mechanism whose magnitude depends less strongly on the initial regulatory shortfall.

The remaining interaction terms capture differences in levels rather than in the slope of the post-ACA compliance response. The coefficient β_4 measures the differential post-ACA shift in MLR for vertically integrated insurers with no pre-regulation compliance gap ($dist = 0$). The coefficient β_3 captures the differential pre-ACA relationship between the 2010 compliance gap and MLR among vertically integrated insurers.

The preferred specification includes issuer-specific linear trends. These trends allow issuers to follow different pre-existing MLR trajectories and therefore prevent differential pre-regulation trends from being attributed to the ACA response. This adjustment is particularly important because vertically integrated and traditional insurers exhibit different MLR trajectories during the pre-period.

Identification requires that, absent the MLR regulation, the relationship between insurers' 2010 compliance gaps and subsequent changes in MLR would not have shifted differentially for vertically integrated insurers relative to traditional insurers, conditional on issuer-state fixed effects, year effects, observed controls, and issuer-specific trends. In other words, the design does not require vertically integrated and traditional insurers to have the same MLR levels; it requires that the relationship between the baseline compliance gap and subsequent MLR changes would not have changed differentially across organizational forms in the absence of the regulation.

A related concern is that treatment intensity is constructed from the 2010 outcome itself. Transitory variation in 2010 MLR can therefore generate mechanical mean reversion: issuers with unusually low MLR in 2010 may tend to experience subsequent increases even without regulation. I address this concern in several ways. First, the preferred specification includes issuer-specific trends estimated using the longer pre- and post-period panel. Second, I estimate a pre-period placebo test of whether the 2010 compliance gap predicts differential

MLR trends by vertical-integration status before implementation of the rule; the null of no differential pre-trend is not rejected ($p = 0.158$). Third, Section 6 reports year-by-year estimates normalized to the 2006–2009 pre-period mean rather than using 2010 alone as the reference period. These exercises reduce, but do not eliminate, concerns arising from the use of a baseline outcome to construct treatment intensity.

Finally, because $dist_below80_i = 0$ for issuers already compliant in 2010, identification of β_2 comes from vertically integrated issuers with positive pre-regulation compliance gaps. The number of such issuers is limited. I therefore report the underlying support and examine the sensitivity of the estimates to alternative samples and the composition of the vertically integrated group in the robustness analysis.

4 Main Results

Figures 1 and 2 provide descriptive evidence on the distribution of MLR before and after implementation of the ACA requirement. For both traditional and vertically integrated insurers, the post-ACA distribution shifts toward higher MLRs and exhibits greater mass around and above the 80 percent threshold. These patterns are consistent with the regulation affecting reported MLRs in both groups, but do not by themselves distinguish how insurers responded to the regulatory incentive.

Table 2 presents the main regression results. Column 1 applies the continuous-treatment specification of Cicala et al. (2019) to the extended 2001–2024 panel. The coefficient on $Distance \times Post$ is 0.759 (SE 0.159), implying that insurers with larger initial compliance gaps experienced proportionally larger post-ACA increases in MLR. The point estimate corresponds to closing approximately 76 percent of the initial compliance gap.

Column 2 estimates the average differential post-ACA shift for vertically integrated insurers without allowing the response to vary with compliance-gap size. The coefficient on $Post \times VI$ is 0.059 (SE 0.023), corresponding to a 5.9 percentage-point larger post-ACA

increase in MLR among vertically integrated insurers.

Column 3 presents the preferred triple-differences specification. Among traditional insurers, the estimated compliance-gap slope is 0.699 (SE 0.154). The triple-difference coefficient is -0.656 (SE 0.182), implying a corresponding slope of $0.699 - 0.656 = 0.043$ among vertically integrated insurers. Thus, the relationship between the initial compliance gap and the post-ACA increase in MLR is substantially weaker among vertically integrated insurers. The coefficient on $Post \times VI$ is 0.087 (SE 0.023), indicating an 8.7 percentage-point differential post-ACA shift among vertically integrated insurers with no initial compliance gap.

Figure 3 illustrates the economic implications of these estimates. Among traditional insurers, the predicted post-ACA increase in MLR rises steeply with the size of the initial compliance gap. Among vertically integrated insurers, the predicted response is comparatively flat. For an insurer with no initial compliance gap, the model predicts an 8.7 percentage-point larger post-ACA shift for VI insurers. This differential declines as the compliance gap increases, and the predicted responses of the two groups converge at a gap of approximately 13 percentage points. Thus, the distinguishing feature of the VI response is not an absence of adjustment after the ACA, but that the magnitude of the adjustment is much less strongly related to the amount of initial regulatory pressure.

Identification of the differential compliance-gap slope is concentrated among vertically integrated insurers that were below the 80 percent threshold in 2010. Although the sample contains 24 vertically integrated issuer clusters, only five have positive pre-regulation compliance gaps and therefore contribute direct identifying variation to the VI compliance-gap slope. I examine the sensitivity of this estimate to sample composition in Section 7.

Finally, the coefficient on $Distance \times VI$ in the preferred specification is -0.994 (SE 0.139), indicating that the pre-regulation relationship between the 2010 compliance gap and MLR differed substantially between vertically integrated and traditional insurers. I do not interpret this coefficient as direct evidence of a particular mechanism. Instead, it underscores the importance of accounting for differential pre-existing MLR trajectories. The preferred

specification therefore includes issuer-specific linear trends, and Section 6 examines these dynamics directly.

Taken together, the preferred estimates reveal two distinct features of the post-ACA response. Among traditional insurers, MLR increases strongly with the size of the initial regulatory shortfall. Vertically integrated insurers instead exhibit a positive post-ACA MLR shift but a much weaker relationship between that increase and the initial compliance gap. The next section examines the margins underlying these differences.

5 Mechanism Evidence

The main results establish that the relationship between regulatory pressure and post-ACA MLR changes differs by organizational form, but they do not identify the margin through which this difference arises. An insurer can increase reported MLR through higher incurred claims or qualifying quality-improvement expenditures. Changes in claims, in turn, may reflect changes in utilization, service mix or intensity, provider prices, or other features of medical spending.

Vertical integration creates an additional potential margin because some provider payments occur between affiliated entities. If adjustment through affiliated-provider payments contributes to the differential response, the difference between vertically integrated and traditional insurers should be concentrated in reported claims and need not be accompanied by a commensurate increase in observable utilization. By contrast, a mechanism operating primarily through quality-improvement spending or administrative expense reclassification would generate changes in those reported spending components.

I examine these predictions in two steps. First, I use utilization and spending measures from the NAIC Exhibit of Premiums, Enrollment and Utilization to test whether changes in reported claims are accompanied by changes in observable service use (Table 3). Second, I use the NAIC Supplemental Health Care Exhibit to examine whether the differential response

is concentrated in incurred claims, quality-improvement expenses, or administrative expenses (Table 4). These analyses provide evidence on the margins underlying the main result, but do not directly observe prices paid in transactions between affiliated entities.

A. Utilization Responses

Table 3 examines whether the differential MLR response is accompanied by changes in observable utilization and other market outcomes. Under the preferred specification, traditional insurers with larger pre-regulation compliance gaps exhibit higher post-ACA claims per member-month and higher claims spending per observed unit of utilization, but no statistically significant increase in ambulatory encounters or inpatient admissions. Thus, the increase in reported claims among traditional insurers does not appear to be driven primarily by greater quantities of the utilization measures observed in the NAIC data.

For vertically integrated insurers, observable utilization likewise does not increase with regulatory pressure. The triple-difference coefficient for ambulatory encounters is negative but statistically insignificant, while the coefficient for inpatient admissions is negative and statistically significant. The differential coefficient for claims per member-month is also negative, consistent with the substantially weaker relationship between regulatory pressure and MLR documented in the main results. Taken together, these estimates provide little evidence that the differential MLR response among vertically integrated insurers reflects a commensurate expansion in observable service use.

The pre-regulation coefficients also indicate substantial differences between vertically integrated and traditional insurers. VI insurers with larger 2010 compliance gaps had lower pre-ACA claims per member-month, premiums, ambulatory encounters, inpatient admissions, and enrollment, while their claims spending per observed unit of utilization was higher. I do not interpret these pre-period relationships as evidence of a particular mechanism. Rather, they reinforce the importance of accounting for differential pre-existing relationships between the compliance gap and insurer outcomes, as in the preferred specification with issuer-specific

trends.

Overall, the utilization results narrow the interpretation of the main finding. The differential post-ACA MLR response among vertically integrated insurers is not accompanied by a corresponding increase in the observable quantities of care reported in the NAIC data. This evidence is consistent with the relevant adjustment occurring through reported claims rather than a proportional expansion in observable utilization, although the aggregate utilization measures do not distinguish changes in provider prices from changes in service mix, intensity, coding, or the allocation of care across providers.

B. Mechanism Analysis — Reported Spending Components by VI Status

In Table 4, I separately examine claims, QI expenses, and administrative expenses as shares of adjusted premiums using the NAIC Supplemental Health Care Exhibit (SHCE), which reports these components separately beginning in 2010. I estimate equation (2) using each component's share of adjusted premiums as the outcome. This decomposition identifies whether the differential response between vertically integrated and traditional insurers is concentrated in claims, QI spending, or administrative expense reclassification.

The results indicate that the differential response is concentrated in the claims channel. The triple-difference coefficient on claims share (-1.061, SE 0.095, $p<0.01$, Column 2) is nearly identical in magnitude to the coefficient on overall MLR (-1.052, SE 0.091, $p<0.01$, Column 1), indicating that nearly all of the differential response is concentrated in the claims component. The triple-difference coefficients on QI share (0.008, SE 0.014, Column 3) and admin share (-0.014, SE 0.147, Column 4) are small in magnitude and close to zero, suggesting that QI expense inflation and administrative reclassification play a minor role.

These results are consistent with the transfer-pricing interpretation. Traditional insurers must increase reported claims through arms'-length contracting or other compliance strategies documented in the prior literature. Vertically integrated insurers, by contrast, can increase

reported claims through internal transfer prices paid to affiliated providers. The absence of differential responses in QI spending and administrative expenses suggests that the divergence between integrated and traditional insurers is concentrated in the claims channel rather than alternative accounting mechanisms.

Because the SHCE begins in 2010, parallel pre-trends cannot be evaluated directly. The decomposition should therefore be interpreted as evidence on the channel underlying the main results rather than as an independent identification strategy. The SHCE estimate for overall MLR (-1.052) has the same sign and is economically large, although its magnitude exceeds the preferred full-panel estimate (-0.656, Table 2, Column 4), suggesting that the decomposition captures the same underlying phenomenon.

6 Event Study

Figure 4 plots year-by-year relationships between the 2010 compliance gap and MLR, separately for traditional and vertically integrated issuers. Coefficients are normalized to the 2006–2009 pre-period mean. Because treatment intensity is mechanically constructed from 2010 MLR, I do not use 2010 as the sole reference period.

Among traditional insurers, the pre-period coefficients are relatively flat through 2009. After implementation of the MLR requirement, the relationship between the pre-regulation compliance gap and MLR becomes positive and increases over the first several post-ACA years, reaching approximately 1.0 per unit of regulatory pressure by 2015–2016 and remaining elevated through 2024. This pattern is consistent with the main regression estimates and extends the temporal scope of Cicala et al. (2019): traditional insurers with larger initial compliance gaps experienced larger and persistent increases in reported MLR after implementation.

The vertically integrated series exhibits a different pre-period pattern. Its coefficients trend upward prior to implementation, indicating that the relationship between the 2010

compliance gap and MLR was already evolving differently for vertically integrated insurers before the ACA. The post-ACA coefficients also remain elevated relative to the earlier pre-period, but the presence of this pre-existing trajectory makes a simple comparison of post-period coefficient levels difficult to interpret causally.

This pattern motivates the issuer-specific linear trends included in the preferred specification. Those trends allow each issuer to continue along its own pre-existing trajectory and identify the post-ACA response from deviations relative to that trajectory rather than from a common pre-period baseline. I therefore interpret Figure 4 primarily as a diagnostic of the underlying dynamics and as motivation for the preferred trend-adjusted specification, rather than as an independent estimate of the differential causal effect of the regulation.

7 Robustness

Tables 5 and 6 examine the sensitivity of the main estimates to alternative samples and specifications. Across these exercises, traditional insurers continue to exhibit a positive relationship between pre-regulation compliance gaps and post-ACA MLR changes. Estimates of the differential response among vertically integrated insurers are more sensitive, consistent with the limited number of VI issuers with positive pre-regulation compliance gaps.

Under the preferred specification with issuer-specific trends, the triple-difference estimate remains negative and statistically significant when excluding the COVID period and when restricting the sample to pre-2014 entrants. Excluding the COVID period yields an estimate of -0.605, while the pre-2014 entrant restriction reproduces the benchmark estimate of -0.656. In contrast, estimates become imprecise and change sign in the large-issuer, balanced-panel, and minimum-pre-period samples. These restrictions substantially alter the already limited set of vertically integrated issuers contributing identifying variation, and I therefore interpret these results as an important limitation on the precision and stability of the triple-difference estimate.

The positive post-ACA shift for vertically integrated insurers is more stable across the alternative samples. Under the preferred specification, the coefficient on $Post \times VI$ ranges from 0.082 to 0.105 and remains statistically significant across the reported sample restrictions. Thus, although the estimated relationship between regulatory pressure and the VI response is sensitive to the composition of the small gap-positive VI sample, the evidence consistently indicates a positive post-ACA MLR shift among vertically integrated insurers that is not proportional to the initial compliance gap.

A potential concern is that vertically integrated insurers are disproportionately organized as HMOs. Restricting the analysis to HMO issuers yields qualitatively similar patterns, suggesting that differences between HMO and non-HMO organizational forms do not alone account for the main results.

Finally, I validate the vertical-integration classification using NAIC Schedule Y holding-company filings for 2011–2025. All 24 issuers classified as vertically integrated are confirmed to be controlled by health care delivery systems rather than standalone insurance companies. This exercise reduces concerns that the results reflect misclassification of organizational form, although it does not address the limited number of VI issuers with positive pre-regulation compliance gaps.

8 Discussion

The results show that organizational form is associated with markedly different responses to the same spending-based regulation. Among traditional insurers, post-ACA increases in reported MLR scale with the size of the pre-regulation compliance gap. Among vertically integrated insurers, the relationship between regulatory pressure and reported MLR is substantially weaker in the preferred specification, while integrated insurers exhibit a positive post-ACA shift in MLR that is largely independent of the initial compliance gap. Taken together, these patterns suggest that organizational form affects the margin through which

firms respond to the MLR requirement.

The mechanism evidence points to reported claims as the relevant margin. The differential response is concentrated in incurred claims, while quality-improvement and administrative expenses exhibit comparatively small differential changes (Table 4). At the same time, observable utilization does not exhibit a commensurate expansion (Table 3). These findings are consistent with adjustment through the prices attached to claims rather than a proportional increase in the quantity of observed medical services. Because vertically integrated insurers transact with affiliated providers, internal provider payments provide one potential mechanism for such an adjustment.

8.1 Evidence on Affiliated Transactions

A central limitation is that the NAIC data do not report the prices of individual transactions between vertically integrated insurers and their affiliated providers. I therefore cannot directly identify transfer pricing or determine how much of the observed claims response reflects changes in internal prices. Changes in service intensity, service mix, coding, or the allocation of care across affiliated and unaffiliated providers could also affect claims without appearing as changes in the aggregate utilization measures available in the NAIC data. The utilization and spending-component results make a simple explanation based on proportional expansion of observed service quantities less consistent with the evidence, but they do not uniquely identify the underlying mechanism.

IRS Form 990 filings provide complementary evidence on related-party financial flows for nonprofit integrated systems. These filings report relationships among affiliated entities and the dollar value of several categories of intercompany transactions. Appendix Table A2 reports these flows for Geisinger Health Plan—the gap-positive VI issuer with the largest pre-regulation compliance gap in the sample—for selected fiscal years spanning the pre- and post-ACA periods.

For Geisinger Health Plan, reported intercompany shared-services revenue increased by

80 percent between FY2009 and FY2011, compared with 12.7 percent growth in premiums over the same period. Other categories of related-party transactions also changed during this period (Appendix Table A2). These data demonstrate that substantial financial flows occurred among affiliated entities and changed around implementation of the MLR requirement. They do not, however, reveal unit transfer prices or establish that the changes were caused by the MLR regulation. I therefore interpret the Form 990 evidence as illustrative evidence on the availability and use of intercompany financial arrangements rather than as a separate causal test of the transfer-pricing mechanism.

8.2 Generalizability and Interpretation

The analysis has two additional limitations. First, identification of the differential response to regulatory pressure is concentrated among a small number of vertically integrated insurers with positive pre-regulation compliance gaps. As shown in the robustness analysis, the magnitude and precision of this estimate are sensitive to sample restrictions that change the composition of this group. The positive gap-independent post-ACA shift among vertically integrated insurers is more stable across specifications, but the precise magnitude of the differential compliance-gap slope should be interpreted with appropriate caution.

Second, the vertically integrated insurers in the analysis are primarily long-standing provider-sponsored health plans whose organizational relationships predate the ACA. The estimates therefore need not generalize to newer forms of insurer-provider integration arising from recent acquisitions of physician practices and other health care businesses. The underlying economic mechanism may nevertheless be relevant more broadly whenever a regulation conditions payments, penalties, or permissible profits on expenditures involving affiliated entities.

8.3 Policy Implications

The findings highlight a measurement challenge for spending-based regulation. A common reported MLR can reflect different underlying economic adjustments depending on organizational form. For an insurer transacting at arm's length, increasing reported claims generally requires greater payments to independent providers or changes in the services financed. An integrated insurer can also alter payments associated with transactions occurring within the same organizational system. Consequently, identical regulatory thresholds need not induce economically equivalent responses across firms.

This distinction matters for interpreting regulatory compliance. The MLR requirement is intended to limit the share of premium revenue retained for non-medical purposes, but the results suggest that reported medical spending need not map one-for-one into changes in the quantity of care delivered. The analysis does not establish whether the differential response of vertically integrated insurers increases or decreases consumer welfare: higher affiliated-provider payments could reflect efficient internal pricing, changes in service intensity or mix, or strategic responses to the regulation. Instead, the results show that organizational boundaries affect the relationship between regulatory incentives and the expenditures used to measure compliance.

As insurer-provider integration expands, these findings suggest a potential role for greater transparency around affiliated-party transactions when such transactions enter regulatory spending measures. Recent policy discussions have raised related concerns in commercial insurance and Medicare Advantage (Frank and Milhaupt, 2023; Angeles and Bailit, 2025; Argüello and Murphy, 2025; Robb and Karcher, 2026). More generally, regulators designing spending-based rules may need to consider whether expenditures generated through affiliated transactions are economically comparable to expenditures determined through arm's-length transactions.

9 Conclusion

This paper shows that vertically integrated insurers responded differently to the ACA's 80 percent medical loss ratio requirement than traditional insurers. Among traditional insurers, post-ACA increases in reported MLR scale with the size of the pre-regulation compliance gap. Among vertically integrated insurers, this relationship is substantially weaker in the preferred specification, while integrated insurers exhibit a positive post-ACA shift in MLR that is largely independent of the initial gap. Together, these findings indicate that organizational form shapes how firms respond to the same spending-based regulation.

The mechanism evidence points to reported claims as the relevant margin. The differential response is concentrated in incurred claims and is not accompanied by a commensurate expansion in observable utilization. Because vertically integrated insurers transact with affiliated providers, these patterns are consistent with adjustment through internal provider payments, including transfer pricing, although the data do not directly observe the prices of affiliated transactions and therefore cannot uniquely identify this mechanism.

The findings have broader implications for spending-based regulation. When compliance is determined using reported expenditures, the economic meaning of those expenditures may depend on how firms are organized. Transactions determined at arm's length and transactions occurring within an integrated organization can generate the same measured expenditure while reflecting different underlying economic adjustments. As a result, identical regulatory thresholds need not induce economically equivalent responses across organizational forms.

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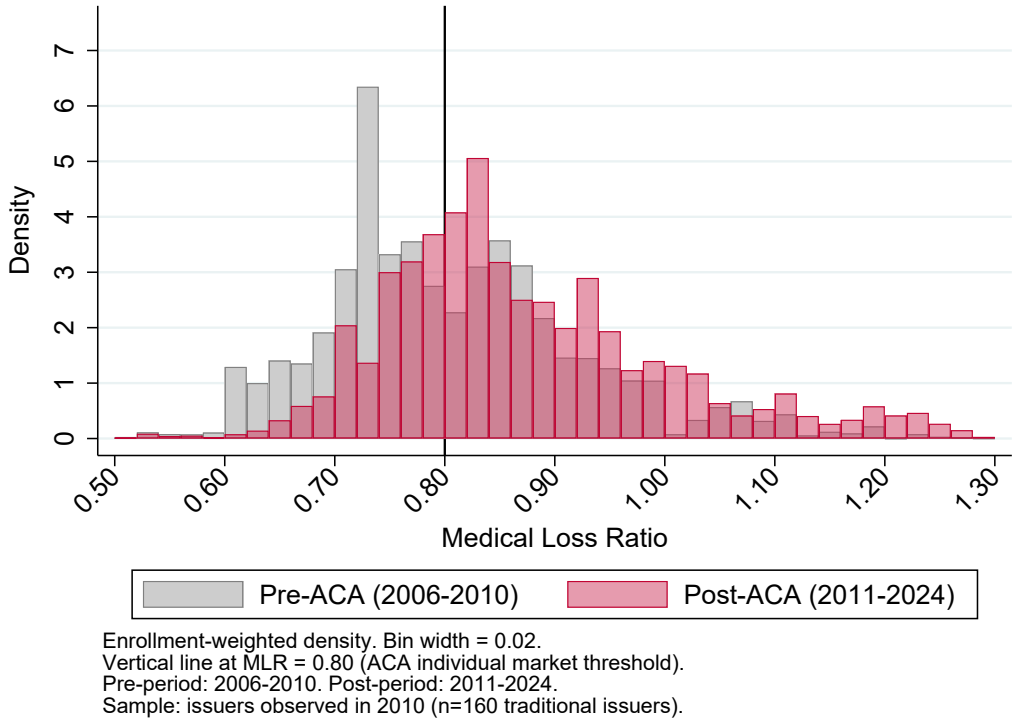
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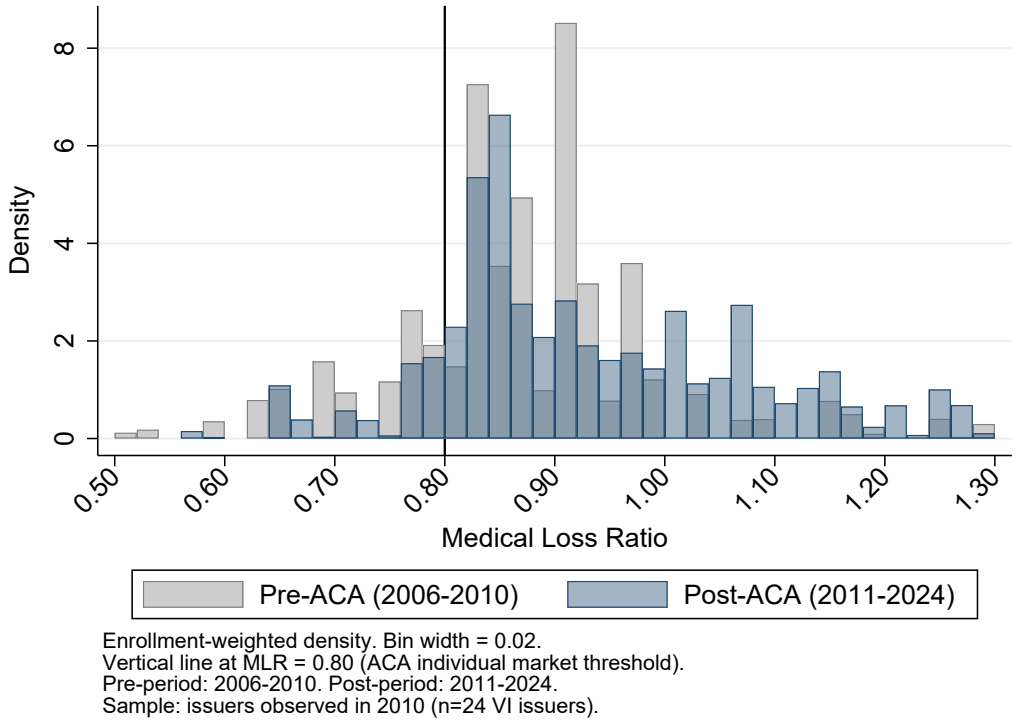
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Figure 1: MLR Distribution, Pre- and Post-ACA: Traditional Insurers



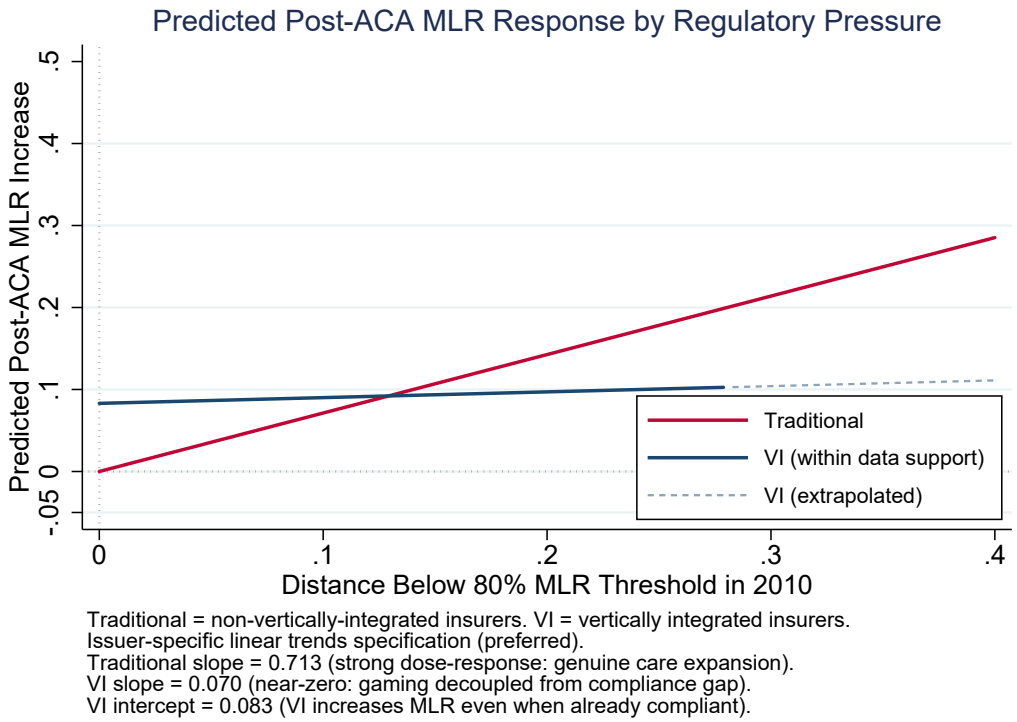
Notes: Distribution of medical loss ratios for traditional (non-integrated) insurers, individual market, 2001–2024. Pre-ACA period: 2001–2010. Post-ACA period: 2011–2024. The vertical dashed line marks the 80 percent regulatory threshold.

Figure 2: MLR Distribution, Pre- and Post-ACA: Vertically Integrated Insurers



Notes: Distribution of medical loss ratios for vertically integrated insurers, individual market, 2001–2024. Pre-ACA period: 2001–2010. Post-ACA period: 2011–2024. The vertical dashed line marks the 80 percent regulatory threshold.

Figure 3: Predicted MLR Response to Regulatory Pressure by Vertical Integration Status



Notes: Figure plots the predicted post-ACA change in medical loss ratio (MLR) as a function of the pre-regulation compliance gap, separately for traditional and vertically integrated (VI) insurers. Predictions are based on Column 3 of Table 2, the preferred triple-differences specification with issuer-specific linear trends. For traditional insurers, the predicted response has a compliance-gap slope of 0.699. For VI insurers, the predicted response is $0.087 + (0.699 - 0.656) \times Distance$, implying a compliance-gap slope of 0.043 and an 8.7 percentage-point differential post-ACA shift at $Distance = 0$. The predicted responses for the two groups intersect at a pre-regulation compliance gap of approximately 0.13.

Table 1: Summary Statistics

Variable	Full Sample	Traditional	VI	Difference
Panel A: Outcome Variables (Issuer-State-Year, $N = 3{,}380$)				
Medical Loss Ratio	0.873	0.861	0.939	0.076***
	(0.171)	(0.167)	(0.179)	(0.022)
Claims per Member-Month ($)	312.237	302.931	364.286	41.075
	(227.247)	(209.370)	(303.751)	(41.755)
Premiums per Member-Month ($)	354.708	347.559	394.690	23.068
	(250.618)	(227.179)	(351.820)	(46.648)
Ambulatory Encounters per Life-Year	8.305	8.621	6.495	−2.313***
	(4.150)	(4.155)	(3.622)	(0.660)
Inpatient Admissions per Life-Year	0.049	0.049	0.050	0.002
	(0.021)	(0.020)	(0.023)	(0.003)
Log Enrollment (thousands of life-years)	2.964	3.026	2.614	−0.444**
	(1.370)	(1.388)	(1.202)	(0.193)
Panel B: Treatment and Issuer Characteristics (Issuer-State, 2010 Baseline, $N = 204$)				
Distance Below 80% Threshold	0.048	0.052	0.024	−0.028*
	(0.079)	(0.079)	(0.074)	(0.016)
Nonprofit (= 1)	0.294	0.277	0.407	0.131
	(0.457)	(0.449)	(0.501)	(0.114)
HMO (= 1)	0.451	0.379	0.926	0.547***
	(0.499)	(0.486)	(0.267)	(0.066)
Enrollment (thousands of life-years)	34.777	37.491	16.985	−20.506***
	(59.415)	(63.035)	(16.917)	(6.421)
State HHI	0.489	0.500	0.415	−0.085*
	(0.248)	(0.250)	(0.222)	(0.046)

Notes: Standard deviations in parentheses for Panel A columns 1–3; standard errors in parentheses for Difference column. Difference column reports OLS coefficient from regressing each variable on a VI indicator.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Medical Loss Ratio Response to Regulatory Pressure by Organizational Form

	(1) Cicala Replication	(2) Simple DiD	**(3) Preferred**
Distance × Post	0.759***	—	0.699***
(DiD — traditional-insurer baseline)	(0.159)	—	(0.154)
Distance × Post × VI	—	—	−0.656***
(triple-difference)	—	—	(0.182)
Post × VI	—	0.059***	0.087***
(VI post-ACA shift at Distance = 0)	—	(0.023)	(0.023)
Distance × VI	—	−1.211***	−0.994***
(pre-period VI differential)	—	(0.136)	(0.139)
Issuer-State FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Issuer Linear Trends	No	Yes	Yes
N	3,380	3,380	3,380
R^2	0.460	0.599	0.605

Notes: The dependent variable is annual medical loss ratio (MLR). *Distance* is the issuer's pre-regulation compliance gap, defined as $\max(0, 0.80 - MLR_{2010})$, and *Post* equals one for 2011–2024. VI indicates vertically integrated insurers. The corresponding slope for vertically integrated insurers is the sum of the coefficients on $Distance \times Post$ and $Distance \times Post \times VI$. $Post \times VI$ gives the differential post-ACA shift for vertically integrated insurers evaluated at $Distance = 0$. All specifications include issuer-state and year fixed effects and the controls described in the text. Standard errors, clustered at the issuer level, are reported in parentheses. The sample contains 24 vertically integrated issuer clusters; identification of the differential compliance-gap slope in Column 3 is concentrated among the five VI issuers with positive pre-regulation compliance gaps.
$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 3: Mechanism Tests — Utilization and Price Responses

	(1) Amb. Enc./LY	(2) Admits/LY	(3) Claims/Util	(4) Claims PMPM	(5) Premiums PMPM	(6) Log Enrollment
Distance × Post	2.429	0.018	3,552.481**	277.512**	137.153	2.733***
(DiD — trad. insurer baseline, replicates Cicala)	(3.660)	(0.019)	(1,595.035)	(107.824)	(119.477)	(0.866)
Distance × Post × VI	−3.194	−0.062**	−2,803.463	−639.290**	−430.903	0.929
(triple-difference)	(4.541)	(0.025)	(2,310.063)	(266.568)	(322.148)	(1.974)
Post × VI	0.390	0.002	−37.005	42.912	31.558	0.137
(VI time trend)	(0.777)	(0.004)	(453.843)	(53.217)	(64.505)	(0.184)
Distance × VI	−16.177***	−0.203***	1,623.175*	−469.711***	−357.621***	−5.714***
(pre-period VI selection)	(2.973)	(0.020)	(901.612)	(128.533)	(131.914)	(0.832)
Issuer-State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Issuer Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes
N	2,888	2,863	3,232	3,380	3,380	3,380
R^2	0.772	0.712	0.700	0.834	0.829	0.849

Notes: All regressions use the preferred issuer-specific linear trends specification. Clustered standard errors at the issuer (*cocode*) level are reported in parentheses. *dist_X_post* denotes the traditional-insurer response to regulatory pressure. *dist_X_post_X_vi* denotes the vertically integrated insurer differential response (triple-difference). *post_X_vi* captures the baseline post-ACA shift for VI issuers independent of compliance distance. *dist_X_vi* captures pre-period VI selection and strategic pre-ACA suppression.
$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

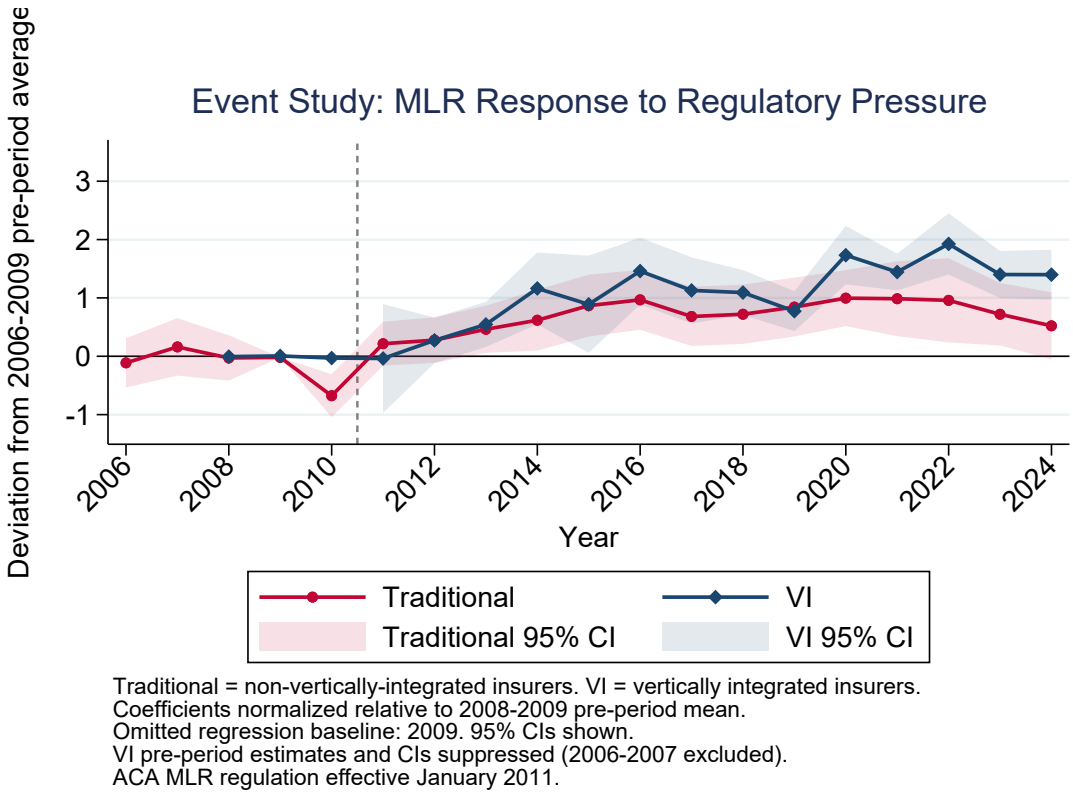
Table 4: Mechanism Analysis — Reported Spending Components by VI Status

	(1) MLR	(2) Claims Share	(3) QI Share	(4) Admin Share
Distance × Post	1.154***	1.149***	0.004**	−0.045
(traditional insurer baseline)	(0.072)	(0.071)	(0.002)	(0.052)
Distance × VI	0.989***	1.000***	−0.010	0.135
(pre-period selection)	(0.044)	(0.053)	(0.014)	(0.144)
Post × VI	0.031*	0.033*	−0.003	0.019
(VI baseline shift)	(0.018)	(0.019)	(0.003)	(0.032)
Distance × Post × VI	−1.052***	−1.061***	0.008	−0.014
(triple-diff)	(0.091)	(0.095)	(0.014)	(0.147)
Observations	3,762	3,762	3,762	3,762

Notes: Unit of observation is issuer-state-year, 2010–2024. Sample restricted to issuers appearing in main NAIC panel (N = 3,762 after dropping singletons). Claims share = incurred claims / adjusted premiums (SHCE line 5.0/1.8). QI share = QI expenses / adjusted premiums (SHCE lines 6.3 or 6.6/1.8). Admin share = (claims adj. exp. + G&A) / adjusted premiums (SHCE lines 8.3+10.5/1.8). $dist = 0.80 - MLR$ (distance to regulatory threshold), winsorized at 1/99. All specifications include issuer-state FE, year FE, and issuer linear trends. Standard errors clustered by issuer.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 4: Event Study — Year-by-Year MLR Coefficients by VI Status, 2001–2024



Notes: Year-by-year triple-difference coefficients from equation (2), estimated separately for traditional (non-integrated) and vertically integrated issuers. Coefficients normalized to the 2006–2009 pre-period mean. Omitted baseline year: 2009. Shaded bands indicate 95 percent confidence intervals.

Table 5: Robustness Checks — Two-Way Fixed Effects

	(1) Large	(2) Balanced	(3) No COVID	(4) No 2014–15	(5) 2-Way Clust.	(6) 85% Thresh.	(7) 3+ Pre-yrs
Distance × Post	0.513***	0.985***	0.777***	0.782***	0.785***		0.648***
(traditional baseline)	(0.168)	(0.223)	(0.167)	(0.167)	(0.164)		(0.177)
Distance × Post × VI	2.472***	2.459***	0.374	0.471*	0.458*		2.717***
(triple-diff: VI gaming)	(0.435)	(0.727)	(0.237)	(0.248)	(0.241)		(0.717)
Post × VI	0.020	0.077*	0.062*	0.061*	0.057**	0.068*	0.056
(VI baseline shift)	(0.023)	(0.040)	(0.034)	(0.033)	(0.027)	(0.036)	(0.037)
dist85 × Post						0.696***	
						(0.136)	
dist85 × Post × VI						0.334	
						(0.256)	
Sample	≥10K lives	Balanced panel	Excl. 2020	Excl. 2014–15	Full sample	Full sample	3+ pre-yrs
Issuer Trends	No	No	No	No	No	No	No
N	2,308	2,217	3,261	3,058	3,380	3,380	2,938
R^2	0.561	0.439	0.468	0.467	0.463	0.467	0.453

Notes: All regressions include issuer-state FE and year FE. Clustered SEs at issuer (cocode) level except Col. 5 (issuer × state). Cols. 1–5, 7: threshold = 80%. Col. 6: threshold = 85% (*dist85* variables shown). Post Schedule Y verified sample (24 VI cocodes). *dist_X_post* = traditional insurer dose-response (replicates Cicala et al. 2019). *dist_X_post_X_vi* = VI triple-diff (key coefficient). *post_X_vi* = VI baseline post-ACA shift independent of distance.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Robustness Checks — Preferred Specification (Issuer Trends)

	(1) Large	(2) Balanced	(3) No COVID	(4) Pre-2014	(5) 3+ Pre-yrs
Distance × Post	0.618***	0.912***	0.702***	0.699***	0.707***
(traditional baseline)	(0.149)	(0.240)	(0.155)	(0.154)	(0.198)
Distance × Post × VI	0.701	0.744	−0.605***	−0.656***	0.655
(triple-diff: VI gaming)	(0.640)	(0.597)	(0.206)	(0.182)	(0.557)
Post × VI	0.082***	0.105***	0.088***	0.087***	0.090***
(VI baseline shift)	(0.031)	(0.025)	(0.023)	(0.023)	(0.024)
Sample	≥10K lives	Balanced panel	Excl. 2020	Pre-2014 entrants	3+ pre-yrs
Issuer Trends	Yes	Yes	Yes	Yes	Yes
N	2,308	2,217	3,261	3,380	2,938
R^2	0.680	0.576	0.611	0.605	0.589

Notes: All regressions include issuer-state FE, year FE, and issuer-specific linear trends. Clustered SEs at issuer level. Post Schedule Y verified sample (24 VI cocodes). Benchmark (full sample, Col. 4 of Table 2): $dist_X_post = 0.699^{***}$, $dist_X_post_X_vi = -0.656^{***}$. Issuer trends absorb differential pre-existing trajectories in these subsamples. Cols. 3–5: key result stable and significant across all checks. $dist_X_post$ = traditional insurer dose-response (replicates Cicala et al. 2019). $dist_X_post_X_vi$ = VI triple-diff (key coefficient). $post_X_vi$ = VI baseline post-ACA shift independent of distance.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

A Vertical Integration Classification Procedure

I identify vertically integrated issuers using a two-step procedure applied to NAIC company names. In the first step, I construct a standardized company name string and apply string-matching rules to flag issuers affiliated with well-documented provider-sponsored health plan systems, including large integrated delivery networks and hospital-system-affiliated plans operating in the individual market. Several rules include state restrictions to avoid false positives from common names. In the second step, I supplement the automated string-matching with a manually verified issuer crosswalk that codes additional issuers not captured by the automated rules, with manual classifications taking precedence where they overlap. I classify an issuer as VI if its organizational parent is a health care delivery system rather than a standalone insurance company.

Table A1: Mechanism Analysis: MLR Numerator Decomposition by VI Status (Two-Way Fixed Effects)

	(1) MLR	(2) Claims Share	(3) QI Share	(4) Admin Share
Distance × Post	1.224***	1.221***	0.002	0.006
(traditional insurer baseline)	(0.075)	(0.074)	(0.002)	(0.071)
Distance × VI	1.019***	1.046***	−0.026***	−0.093
(pre-period selection)	(0.011)	(0.013)	(0.007)	(0.084)
Post × VI	0.063***	0.070***	−0.007***	0.035
(VI baseline shift)	(0.022)	(0.022)	(0.003)	(0.029)
Distance × Post × VI	−1.168***	−1.193***	0.026***	0.133
(triple-diff)	(0.063)	(0.064)	(0.007)	(0.107)
Observations	3,762	3,762	3,762	3,762
R^2	0.735	0.736	0.598	0.408

Notes: Unit of observation is issuer-state-year, 2010–2024. Sample restricted to issuers appearing in main NAIC panel. Post Schedule Y verified sample (24 VI cocodes). Claims share = incurred claims / adjusted premiums (SHCE line 5.0/1.8). QI share = QI expenses / adjusted premiums (SHCE lines 6.3 or 6.6/1.8). Admin share = (claims adj. exp. + G&A) / adjusted premiums (SHCE lines 8.3+10.5/1.8). $dist = 0.80 - MLR$ (distance to regulatory threshold), winsorized at 1/99. All specifications include issuer-state FE and year FE. No issuer linear trends. Standard errors clustered by issuer.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

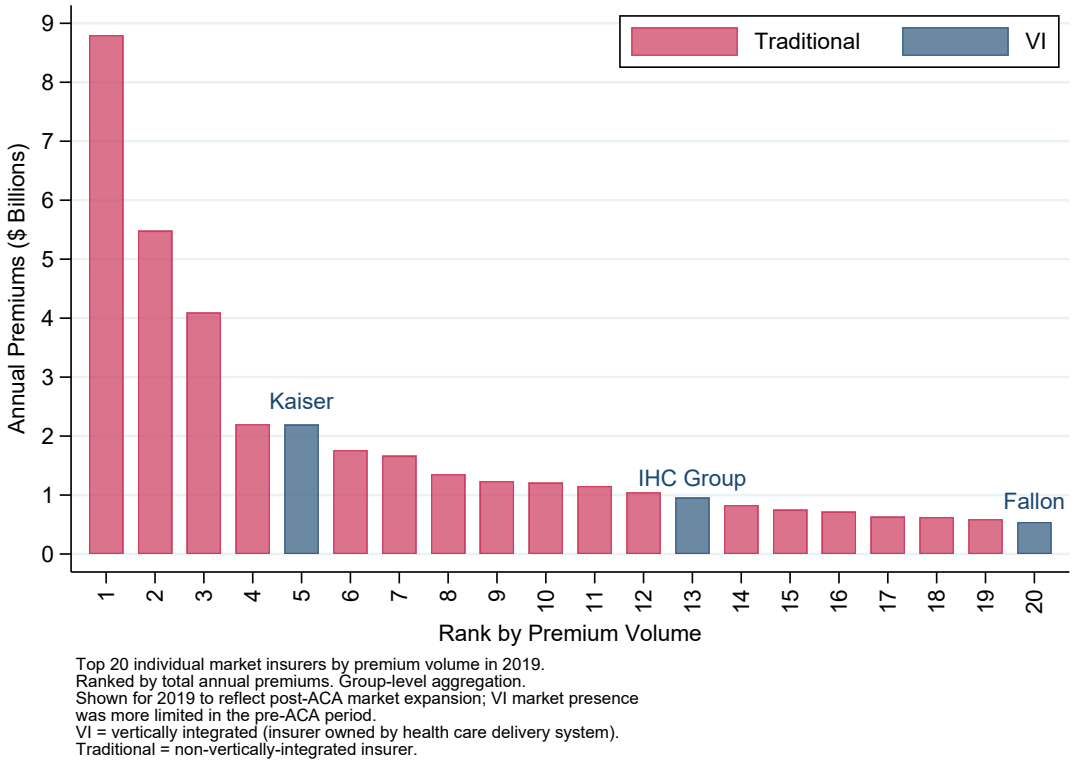


Figure A1: Individual Market Premium Volume by Insurer Group, 2019

Notes: Annual premium volume by insurer group in the individual market, 2019. Kaiser Foundation ranked fifth among all individual market participants with $2.2 billion in premium volume.

Table A2: Illustrative Evidence on Intercompany Financial Flows: Geisinger Health Plan

Fiscal Year	**Premiums**	**IC Shared Services**	**Inter-Entity Expense**	**Parent Transfer**
FY2009	\$812.3M	\$41.2M	\$33.3M	\$36.0M
FY2010	\$871.3M	\$52.7M	\$45.3M	\$48.0M
FY2011	**\$915.1M**	**\$74.1M**	**\$54.7M**	**\$37.0M**
FY2012	\$1,121.0M	\$82.3M	\$32.2M	≈\$0
FY2017	\$2,102.5M	\$72.3M	\$37.8M	\$12.7M
Growth FY2009–FY2011	+12.7%	+80.0%	+64.3%	−2.8%

Notes: Data are from IRS Form 990 filings for Geisinger Health Plan (EIN 23-2311553). FY2011 (bolded) is the first full fiscal year after ACA MLR implementation. IC Shared Services denotes related-party service revenue reported on Form 990; Inter-Entity Expense denotes payments to affiliated entities; Parent Transfer denotes transfers to affiliated foundations or parent organizations. Source: IRS Form 990 filings.