Exogenous Exits, Market Structure, and Equilibrium Contracts in Healthcare

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Abstract

This paper quantifies the causal effects of exogenous health insurer exits on contract structure and healthcare market outcomes, proposing market concentration as a likely mechanism for these effects. Leveraging the termination of the largest health insurer in Colombia, I find that the use of fee-for-service contracts increased after the termination relative to capitation contracts. Treatment effects are larger in markets with higher provider than insurer concentration at baseline. Results suggest that equilibrium contracts place the financial risk on insurers in markets where providers have higher bargaining leverage.

Keywords: Market structure, Health insurance, Fee-for-service, Capitation.

JEL codes: I10, I11, I13, L10.

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1 Introduction

Provision of high quality healthcare and containing healthcare costs are some of the main policy goals across different health systems. In systems where access to healthcare services is intermediated by private insurance companies, these goals depend on the outcome of negotiations between insurers and providers. Such is the case of high- and middle-income countries like the U.S., Switzerland, Netherlands, Germany, Israel, and Colombia.[1] In these countries, insurers negotiate contracts with providers to deliver healthcare to their enrollees. Factors that affect the outcome of these negotiations can therefore directly impact quality of care and costs.

This paper examines the effect of exogenous insurer and provider exits on the choice of contracts and proposes market structure as a likely mechanism. The focus is on the choice between fee-for-service (FFS) and capitation contracts, and market structure is characterized by insurer and provider market concentration. Market concentration can affect the value of outside options during bilateral negotiations over contracts, which may have downstream impacts on healthcare quality, utilization, and spending.

The setting is the Colombian healthcare system. In Colombia, private insurers provide access to a national health insurance plan through a network of providers. Although all aspects of the insurance plan are closely regulated (premiums, cost-sharing, and benefits), insurers and providers bargain over contracts for every health service covered in the national plan. Based on government rules, the contract space is limited to four types of contracts: FFS, capitation, fee-for-package, and fee-for-diagnosis, with the first two representing 86% of claims from 2013 to 2019.

To study the determinants of contract choice, I leverage the exogenous termination

[1] See https://www.commonwealthfund.org/international-health-policy-center/countries

of the largest health insurer and its hospitals in December 2015, called SaludCoop. This insurer covered 20% of enrollees and was vertically integrated with 38 hospitals. The government terminated SaludCoop due to its engagement in illegal activities. My data comprise all the health claims made by individuals enrolled in Colombia's contributory healthcare system from 2013 to 2019, 3 years before and 4 years after the termination. The contributory system covers the half of the population in the country who pay payroll taxes. These data are unprecedented because they report the payment type (FFS/capitation) and prices that insurers negotiate with in-network providers for every health service.

Using a dynamic difference-in-differences approach, I compare municipalities where SaludCoop operated against those where it did not operate, before and after the termination. Findings show that the fraction of services covered under FFS for every incumbent insurer-provider pair increased 3.4 percentage points (p.p) on average after the termination. Treatment effects are larger in markets where providers are more concentrated than insurers, as measured by the pre-period Herfindahl-Hirschman index (HHI). If market concentration determines the value of outside options for insurers and providers during negotiations and hence their bargaining leverage, then equilibrium contracts should be ones that place the financial risk on the insurer –such as FFS contracts– in markets where providers have relatively higher bargaining leverage, in line with my results.

Using the same empirical design I proceed to study changes in healthcare prices, utilization, and spending. Results show a 20% reduction in the number of claims and healthcare spending per enrollee on average after the termination. This reduction in utilization and spending happens across different service categories, but is smaller among complex services such as those provided in an inpatient setting. Reductions in spending are despite increases in average claim prices. Findings indicate that negoti-

ated prices increased 8% by the end of the sample period in treated markets relative to controls. Consistent with the notion that relative market concentration relates to relative bargaining leverage, I find that reductions in healthcare utilization are larger in markets where insurers have higher bargaining leverage than providers. However, other mechanisms can also be behind the relatively large reductions in utilization and spending. For example, it may be the case that incumbent insurers narrow their network of covered providers after the termination to cream-skim healthy enrollees who make fewer claims, or that insurers experience congestion in their networks due to the influx of SaludCoop's enrollees, which limits consumers' ability to claim health care services.

This paper relates to the literature that analyzes the association between contract negotiations and healthcare market outcomes (Cooper et al., 2019; Baker et al., 2019). While existing work has focused on prices as the main outcome of bilateral negotiations between insurers and providers (e.g., Liebman, 2022; Ghili, 2022; Ho and Lee, 2019, 2017; Collard-Wexler et al., 2019; Horn and Wolinsky, 1988), this paper posits that contract choice and, in particular, payment retrospectiveness is another relevant outcome of these bilateral negotiations. My paper contributes causal estimates of the determinants of contract choice using exogenous variation in market structure, which is rarely observed. These results are relevant for our understanding of how health insurance market structure impacts healthcare utilization and ultimately patient health, providing guidance for policymakers on how to regulate insurance markets.

The paper also relates to the theoretical (Acquatella, 2022; Choné and Ma, 2011; McGuire, 2000) and empirical (Gupta, 2021; Finkelstein et al., 2018; Ho and Pakes, 2014; Clemens and Gottlieb, 2014; Iizuka, 2012) literatures that study how payment structure impacts insurer and provider behavior. Several papers have focused on the impact of capitation and managed care on health outcomes and risk selection

incentives (McWilliams et al., 2020; Kuziemko et al., 2018; Aizer et al., 2007). Others have studied how FFS payments affect healthcare spending and intensity of care (McNamara and Serna, 2024; Somé et al., 2020; Adida et al., 2017; Duggan, 2004; Sørensen and Grytten, 2003; Baker, 1997; Ransom et al., 1996). Finally, recent work has simulated alternative contracts (Gaynor et al., 2023; Einav et al., 2018). Yet, evidence on the question of what determines the choice of contracts between insurers and providers has been limited. My paper provides some of the first evidence on this front by examining insurer and provider market concentration as a likely mechanism through which changes in market structure may propagate to consumers' healthcare utilization and spending.

The rest of this paper is structured as follows: section 2 describes my empirical setting and data, section 3 presents the empirical strategy, section 4 quantifies the impacts of exogenous terminations on contract choice, section 5 quantifies the impacts on healthcare market outcomes, and section 6 concludes.

2 Background and data

The Colombian health insurance system has near-universal coverage, providing access to a national health insurance plan through private and public insurers. The half of the population in the country who pay payroll taxes is covered by the contributory system. The other half who have low incomes is covered by the subsidized system. Almost every aspect of the national insurance plan is regulated by the government. For example, insurance premiums are zero, cost-sharing rules are a function of the enrollees' monthly income level but are standardized across insurers and providers, and the list of covered services is determined by the government.[2] Health service

[2]For individuals earning less than 2 times the minimum monthly wage (MMW) the coinsurance rate equals 11.5%, the copay equals 2,100 pesos ($1.05), and the maximum out-of-pocket amount in

coverage is comprehensive, from basic primary care consultations to complex organ transplants. In 2015, the national plan covered over 12,000 health services.[3]

Insurers do not charge premiums but receive per-enrollee transfers from the government at the beginning of every calendar year that are risk-adjusted for sex, age, and municipality of residence. At the end of every calendar year, insurers are also compensated by the government for their enrollees' health based on a coarse list of diagnoses.[4]

2.1 Insurer-provider contracts

To deliver the benefits of the national plan, insurers contract with providers to form their provider networks. Insurers and providers establish contracts for each health service in the national plan. These contracts can involve either capitation payments whereby the insurer pays the provider a fixed amount per enrollee for a set of services, or fee-for-service (FFS) payments whereby the insurer pays the provider every time a service is delivered.[5]

Under capitation, payments per patient are made for a set of services taking into account negotiated service prices and expected demand per service. These payments

a year equals 57.5% times the MMW. For those with incomes between 2 and 5 times the MMW, the coinsurance rate is 17.3%, the copay is 8,000 pesos ($2), and the maximum out-of-pocket amount is 230% times the MMW. Finally, for people with incomes above 5 times the MMW, the coinsurance rate equals 23%, the copay equals 20,900 pesos ($10.45), and the maximum out-of-pocket amount is 460% times the MMW. The average exchange rate during 2014 was 2,000 COP/USD.

[3]See Resolution 4678 of 2015 by the Ministry of Health and Social Protection.

[4]The ex-post risk adjustment mechanism is known as the High Cost Account, and compensates insurers for the following diseases: cervical cancer, breast cancer, stomach cancer, colon cancer, prostate cancer, lymphoid leukemia, Myeloid leukemia, Hodgkin lymphoma, non-Hodgkin lymphoma, epilepsy, rheumatoid arthritis, and HIV-AIDS (See Resolution 0248 of 2014 by the Ministry of Health and Social Protection).

[5]Other types of contracts include fee-for-package whereby the insurer pays the provider a fixed amount per enrollee and group of services associated with a health episode, and fee-for-diagnosis whereby the insurer pays the provider a fixed amount per enrollee and group of services associated with disease management. These alternative contracts represent around 14% of all health claims from 2013 to 2019, which I exclude from my data.

are made *once* per patient at the beginning of the year, *before* services are provided, and therefore are prospective. FFS payments are made *after* services are provided and therefore are retrospective. Capitation incentivizes providers to under-provide care or to provide less costly treatments because healthcare costs not covered by the capitation payment are borne by the provider. Instead, FFS incentivizes providers to over-provide care or to provide the most profitable treatments. Because of these incentives and the timing of payments, the insurer bears the financial risk under FFS, while the provider bears this risk in a capitation contract.

As an example, suppose a patient has 1 consultation with the cardiologist, the unit price of which is \$50; and receives 2 electrocardiograms, the unit price of which is \$100. If the insurer has a FFS contract with the provider for each of these services, then it pays \$250. If the insurer has included these services in a capitation contract and expects that per-patient demand for each service equals 1, then it pays \$150 to the provider.

Contracts are typically negotiated at the beginning of every calendar year, but some insurer-provider pairs negotiate mid-year as well. Although these negotiations are unregulated, the government recommends that relatively low-complexity health services such as primary care visits be covered under capitation, while it recommends that relatively high-complexity services such as transplants be covered under FFS (Law 1438 of 2011). These recommendations are made in an attempt to control the incentives that providers face under each contract. Nevertheless, insurers and providers do not need to abide by the government's recommendations. Appendix Figure 1 presents the fraction of insurer-provider pairs that use a FFS contract for every service category.

2.2 Market structure and insurer termination

During 2014, there were 19 private insurers in the contributory system, 13 of which covered 98% of enrollees. Insurers compete for enrollees in every municipality in which they operate, and individuals can only enroll with insurers that operate in their municipality of residence.[6] In 2014 there were also around 11 thousand providers in the country, comprising hospitals, clinics, and physician practices.

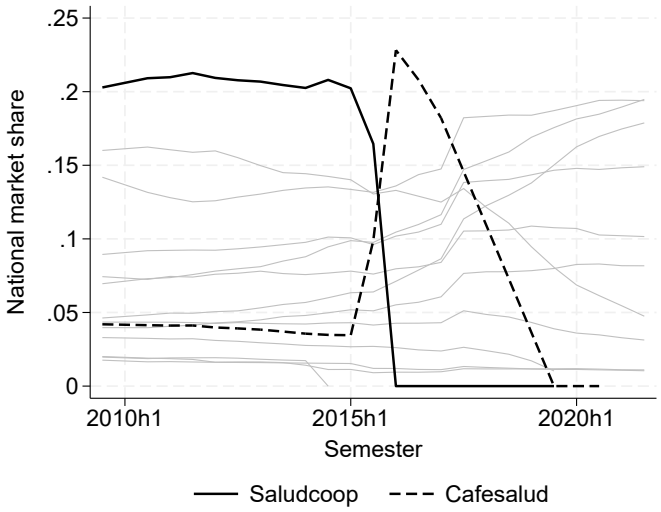
To study the determinants of contract choice, I leverage the termination of the largest health insurer in the country and its hospitals during December 2015, called SaludCoop. The government terminated this insurer because it diverted nearly $250 billion to investments outside of the healthcare system and because its board of directors engaged in illegal activities and financial malpractice. As seen in Figure 1, SaludCoop covered 20% of enrollees in the country, who were all transferred to an incumbent insurer called Cafesalud during the first three months of 2016. Cafesalud covered on average less than 5% of enrollees prior to the termination. After the first three months of 2016, enrollees were allowed to switch. Cafesalud was itself terminated in 2019 due to its outstanding debts with in-network providers and numerous patient complaints.[7] The fact that SaludCoop's market share is stable before 2016 suggests that there were no potential preemptive switches prior to the termination. Of those enrolled with SaludCoop and transferred to Cafesalud, 24% switched out of Cafesalud in 2016, an additional 23% switched out in 2017, and by the end of 2018 most individuals had left this insurer.

SaludCoop was vertically integrated with 38 hospitals across the country, which were forced to shut down after December 2015. These were relatively large hospitals

[6] Insurers make entry decisions at the municipality level. There are 1,123 municipalities in the country.

[7] Buitrago et al. (2024) provide a more detailed description of SaludCoop's termination.

FIGURE 1: National market shares by insurer



Note: Figure presents the national market share for all 19 insurers in the contributory system. Figure uses the full aggregate enrollment data. The terminated insurer, SaludCoop, is depicted in the solid black line. The reassignment insurer, Cafesalud, is depicted in the dashed black line. The other 17 insurers are depicted in gray. Semesters are half-years from January to June and from July to December.

representing a total of 2,354 beds. SaludCoop hospitals were forced to sell their assets to other providers, but this did not happen during the sample period. In markets where SaludCoop hospitals operated, other insurers used to cover these hospitals as well. Vertical integration therefore did not imply complete foreclosure of hospital services from rival insurers.

2.3 Data and sample restrictions

The data for this paper are all the health claims made by the half of the population in the country covered by the contributory system from 2013 to 2019, 3 years before and 4 years after SaludCoop's termination. The claims data report patient anonymized identifier, patient's insurer, provider identifier, service code, International Classification of Diseases (ICD-10) code, negotiated service price, date, service contract (capitation of FFS), service setting (hospital care, ambulatory care, urgent

care, domiciliary care), and patient characteristics such as sex, age, and municipality of residence. Service codes are 6-digit codes assigned to each service covered in the national insurance plan. Each digit in the code represents specific anatomical areas and procedures. I complement this data with publicly available information on the number of enrollees per insurer, municipality, and month.[8]

For the contract choice analysis, I aggregate the claims data to the insurer, provider, municipality, and semester level.[9] For every observation, I calculate the fraction of services covered under FFS, total number of claims, total healthcare spending, and the number of inpatient claims, ambulatory claims, urgent care claims, and consultations. I use a balanced panel of insurer-provider pairs, which means that not all insurers are present in my final analysis data. For the healthcare market outcomes analysis, I aggregate the claims data to the insurer, municipality, and semester level, calculating the number of claims and healthcare spending per enrollee. For this analysis I also focus on a balanced panel of insurers. Appendix 1 describes the data cleaning process in detail. Throughout my empirical analysis I *exclude* SaludCoop and Cafesalud, focusing on changes in outcomes at the rest of incumbent insurers. The 8 remaining insurers in my final data sets represent 71% of enrollees in the contributory system by the end of the sample period (see Appendix Table 1).

3 Empirical Strategy

The termination of SaludCoop and its hospitals provides a unique setting to study the determinants of contract choice in healthcare. My empirical approach consists

[8]The claims data only contains individuals who make claims. To construct appropriate measures of healthcare utilization and spending that take into account individuals who do not make claims, this additional enrollment data is needed.

[9]Semesters are half-years from January to June and from July to December.

of comparing municipalities where SaludCoop operated relative to those where it did not operate, before and after its termination, using the following dynamic difference-in-differences (*did*) design:

$$f_{jhmt} = \sum_{\substack{k=-6 \\ k\neq -1}}^{7} \beta_k \mathbf{1}\{t - t^* = k\} \times T_m + \delta_j + \alpha_m + \gamma_t + \varepsilon_{jhmt} \tag{1}$$

Here f_{jhmt} is the fraction of services covered under FFS between insurer j and provider h in municipality m during semester t, t^* is the semester when SaludCoop is terminated (2016-1), T_m is an indicator for municipalities where SaludCoop operated in 2015, δ_j is an insurer fixed effect, α_m is a municipality fixed effect, and γ_t is a semester fixed effect.

I use De Chaisemartin and d'Haultfoeuille (2020)'s estimator that is robust to heterogeneous treatment effects, and cluster standard errors at the municipality level, which defines the level of treatment. Identification of the causal effect of exogenous exits on contract choice relies on the assumption that the fraction of services covered under FFS in treated municipalities would have evolved as in the control group had the termination not taken place. An indirect test of this assumption is to verify that treated and control municipalities have parallel outcome trends prior to the termination. Identification can be threatened if there are omitted variables that are correlated with both SaludCoop's location decisions and post-termination contract trends.

TABLE 1: Summary statistics of datasets

	A. Contract choice analysis data			
	Treated		Control	
	Pre	Post	Pre	Post
Fraction services under FFS	0.91 (0.24)	0.90 (0.27)	0.93 (0.24)	0.87 (0.29)
Average price†	0.44 (0.79)	0.67 (1.37)	0.10 (0.11)	0.17 (0.16)
Insurer HHI	1392 (459)	1741 (633)	5010 (1641)	5433 (1946)
Provider HHI	380 (523)	409 (549)	6680 (2661)	5281 (3258)
Observations				
$jhmt$	38269	55283	9471	13341
jh	4481	4481	1088	1088
m	434	434	339	339
	B. Healthcare outcomes analysis data			
	Treated		Control	
	Pre	Post	Pre	Post
Claims per enrollee	4.51 (2.57)	4.32 (32.9)	2.65 (29.6)	2.56 (6.63)
Spending per enrollee†	0.19 (0.12)	0.24 (0.73)	0.08 (2.01)	0.09 (0.50)
Claim price†	0.36 (0.47)	0.56 (0.63)	0.06 (0.08)	0.07 (0.12)
Inpatient claims per enrollee	0.46 (0.50)	0.31 (0.45)	0.20 (26.1)	0.14 (0.98)
Urgent care claims per enrollee	0.45 (0.59)	0.32 (0.88)	0.57 (3.73)	0.49 (2.87)
Consultations per enrollee	1.72 (1.03)	1.72 (12.3)	1.15 (3.59)	1.20 (3.56)
Insurer HHI	1949 (967)	2410 (1304)	4918 (1762)	5700 (2313)
Provider HHI	1326 (1900)	1433 (1973)	7165 (2618)	6845 (3018)
Observations				
jmt	10884	14512	6600	8800
jm	1814	1814	1100	1100
m	434	434	339	339

Note: Table presents mean and standard deviations in parenthesis of the contract choice analysis data in panel A and the healthcare outcomes analysis data in panel B. Each panel presents summary statistics separately for treated and control groups, pre and post SaludCoop's termination. Treated units are municipalities where SaludCoop operated in 2015. Control units are municipalities where SaludCoop did not operate. In panel A an observation is a combination of insurer j, provider h, municipality m, and semester t. In panel B an observation is a combination of insurer j, municipality m, and semester t. Summary statistics are weighted by the number of enrollees per insurer, municipality, and semester. The average claim price in panel A is averaged across services for every observation. Insurer HHI is calculated based on market shares on the number of enrollees. Provider HHI is calculated based on market shares in total healthcare costs. (†) measured in millions of pesos. The average exchange rate in 2014 was 2,000 COP/USD.

Table 1 presents summary statistics of my final data sets. In Panel A an observation is a combination of insurer, provider, municipality, and semester. Across treated and control markets there is a decreasing trend in the fraction of services covered under FFS, as well as an increase in average claim prices in the post-period.

On average, treated municipalities saw a 35% increase in insurer HHI with respect to the number of enrollees in the post-period, while control municipalities saw a 7% increase. Baseline insurer HHI levels also differ substantially between treated and control municipalities. In the pre-period, average insurer HHI equals 1,392 in treated markets and 5,010 in controls. Provider HHI measured with respect to total healthcare spending in a municipality did not meaningfully change after the termination in treated markets, but decreased 21% in controls. The baseline provider HHI equals 380 in treated municipalities and 6,680 in controls.

In Panel B of the table, an observation is a combination of insurer, municipality, and semester. On average, enrollees made 0.34 and 0.15 fewer health claims after the termination in treated and in control municipalities, respectively. The reduction in utilization in treated markets happens across different service categories, such as inpatient care, urgent care, and doctor consultations. Healthcare spending increased on average 24% after the termination in treated municipalities and 13% in controls. Put together, trends in utilization and spending indicate that claim prices increased after the termination in both sets of markets. Appendix Figures 2 and 3 present additional descriptive evidence of insurer and provider market concentration.

4 Effects of Exogenous Exits on Contract Choice

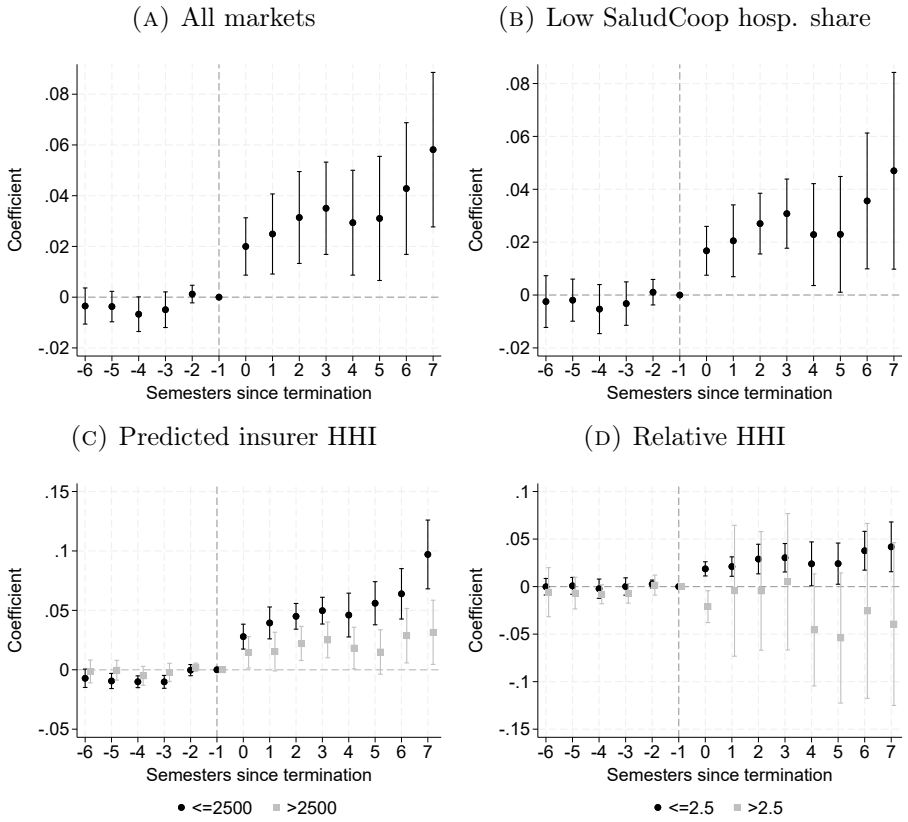
Panel A of Figure 2 presents estimates of the dynamic treatment effects on contract choice. Prior to the termination, treated and control municipalities have parallel FFS

trends. After the termination, the fraction of services covered under FFS increased between 2 and 6 p.p. The impact on the use of FFS is not a result of SaludCoop hospitals closing. Even in markets where these hospitals had less than 1% market share in total healthcare spending, presented in Panel B, I estimate similar treatment effects. The impact is also not constrained by government regulation recommending low-complexity services to be covered under capitation. Appendix Figure 4 shows significant increases in the use of FFS among these types of services as well.

Panels C and D explore market concentration as a potential mechanism for the choice of contracts. Panel C presents treatment effects conditional on insurer HHI during 2014. This HHI is calculated using predicted insurer market shares in the number of enrollees assuming that SaludCoop's enrollees were reassigned to incumbent insurers in proportion to their observed market shares.[10] Results show that the effect on FFS take-up is larger in markets with relatively low levels of insurer concentration depicted in black. Instead, highly concentrated insurance markets saw relatively small increases in the use of FFS as seen by the point estimates in gray. These results are robust to using an unbalanced panel of insurer-provider pairs as seen in Appendix Figure 7, and to alternative market definitions as seen in Appendix Figure 9, which defines markets as services and constructs market concentration measures based on total healthcare spending in each service. Appendix 3 presents all the associated coefficients and standard errors.

[10] Suppose there are 100 enrollees and three insurers in a municipality: EPS010 (SURA) with market share equal to 0.3, EPS016 (Coomeva) with market share equal to 0.2, and EPS013 (SaludCoop) with market share equal to 0.5. Predicted insurer HHI after EPS013 is terminated is calculated from market shares for EPS010 and EPS016 equal to 0.6 ($= 100^{-1}(30 + 50 \times \frac{0.3}{0.5})$) and 0.4 ($= 100^{-1}(20 + 50 \times \frac{0.2}{0.5})$)

FIGURE 2: Impact of insurer exit on contract choice



Note: Figure presents coefficients and 95% confidence intervals of a dynamic *did* design. The outcome variable is the fraction of services covered under FFS. Treated units are municipalities where SaludCoop operated in 2015. Control units are municipalities where SaludCoop did not operate. Panel A uses the full sample of markets and Panel B uses the subsample of treated markets where SaludCoop's hospitals had less than 1% market share in total healthcare costs during 2014. Panel C explores the heterogeneity of treatment effects by insurer HHI in 2014. Insurer HHI is calculated using predicted insurer market shares on the number of enrollees assuming that SaludCoop's enrollees are reassigned to incumbent insurers in proportion to their observed market shares. The group with insurer HHI $\leq$ 2500 represents 52% of enrollees and the group with HHI$>$ 2500 represents 48% of enrollees. Panel D explores the heterogeneity of treatment effects by relative insurer to provider HHI in 2014. Provider HHI is calculated based on provider market shares in total healthcare spending. The group with relative HHI$\leq$ 2.5 represents 48% of enrollees and the group with relative HHI$>$ 2.5 represents 52% of enrollees. All specifications include insurer, municipality, and semester fixed effects. Standard errors are clustered at the municipality level.

Panel D presents treatment effects conditional on the ratio between insurer and provider HHI during 2014. Provider HHI is calculated using provider market shares in total healthcare spending in a municipality. Findings show that the fraction of services covered under FFS increased between 1 and 5 p.p after the termination in markets where provider concentration was relatively high as seen in the estimates in black. But there is no statistically significant change in the use of FFS in markets with relatively

high insurer concentration as seen in the estimates in gray. This result goes in line with providers having higher bargaining leverage than insurers in markets where providers are relatively more concentrated, and therefore with equilibrium contracts being ones that place the financial risk on insurers. Appendix Table 2 corroborates these findings by presenting results of a *did* regression including time-varying insurer and provider HHIs as separate regressors, and controlling for market, semester, and insurer-by-provider fixed effects.

Another plausible explanation for the increased use of FFS, besides market concentration, is that FFS is the preferred contract when uncertainty over payments rises, something we would expect after the termination of a large insurer. If this kind of uncertainty resolves over time, the increasing treatment effects even after four years since the termination would be inconsistent with this explanation. Appendix Figure 5 also rules out that the results are driven by markets with sicker populations or with larger hospitals.

More generally, the effects of exogenous exits on contract choice would likely spill over to premiums in settings where insurers compete along this dimension. Increased provider bargaining leverage after the termination would raise negotiated prices, and insurers would pass-through these cost increases to consumers in the form of higher premiums.[11] This channel is not present in my setting because the government sets insurance premiums to zero and insurers compete only on their network of covered providers.

Variation in healthcare prices. To the extent that market concentration changes the value of the outside option for contract negotiations between insurers

[11] Equation (5) in Ho and Lee (2017) shows that premiums in a bargaining environment are large relative to Nash-Bertrand premiums whenever the provider's gains from trade with insurers are large. Dafny et al. (2015) also show that stronger insurer competition is associated with lower premiums. And, for the converse, Cabral et al. (2018) show that the pass-through of government subsidies for insurers towards premiums is low the more concentrated is the insurance market.

and providers, market concentration may also explain variation in healthcare prices. To see how much of the price variation can be explained by insurer and provider HHIs I follow Cooper et al. (2019)'s methodology. I estimate a linear regression of the logarithm of prices per insurer, provider, municipality, service, and semester on insurer and provider HHIs. The R^2 of this regression is 0.11. Including municipality-service-semester fixed effects increases the R^2 to 0.81, and additionally including insurer-by-provider fixed effects increases the R^2 to 0.85.[12] Market concentration can therefore explain 11% of the variation in healthcare prices within insurer-provider pair, but there is still 15% of unexplained variation after including all the fixed effects, suggestive of additional unobservable determinants of prices.

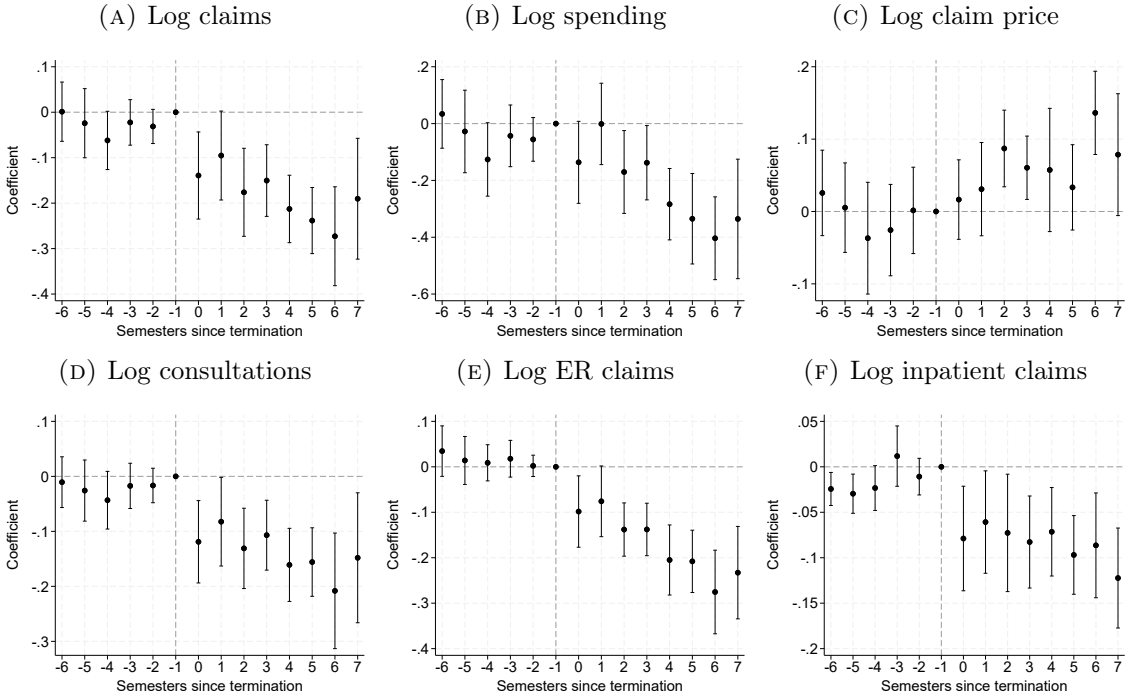
5 Effects of Exogenous Exits on Healthcare Outcomes

In this section I quantify the impact of exogenous exits on healthcare utilization and spending per enrollee. I estimate equation (1) on data at the insurer, municipality, and semester level. Panels A to C of Figure 3 present event study results for the log of the number of claims per enrollee, the log of healthcare spending per enrollee, and the log of claim prices, respectively. The main takeaway is that healthcare utilization and spending both decreased substantially after the termination, but average claim prices increased.

Prior to the termination, treated and control municipalities had parallel outcome trends. After the termination, Panel A shows a 20% decline on average in the number

[12] In the specifications that include municipality-service-semester fixed effects and insurer-by-provider fixed effects, insurer and provider HHIs are perfectly collinear with the fixed effects and therefore are excluded.

FIGURE 3: Impact of insurer exit on intensity of care, utilization, and spending per enrollee



Note: Figure presents coefficients and 95% confidence intervals of a dynamic *did* design using as outcomes the log of total claims per enrollee in Panel A, the log of total spending per enrollee in Panel B, the log of claim price in Panel C, the log of the number of consultations per enrollee in Panel D, the log of urgent care claims per enrollee in Panel E, and the log of inpatient claims per enrollee in Panel F. Treated units are municipalities where SaludCoop operated in 2015. Control units are municipalities where SaludCoop did not operate. All specifications include insurer, municipality, and semester fixed effects. Standard errors are clustered at the municipality level.

of claims per enrollee from a baseline of 2.6. Panel B shows similar reductions in healthcare spending per enrollee from a baseline of 80,000 pesos ($40). Most of the reduction in utilization and spending per enrollee comes from an increase in the number of new consumers (previously with SaludCoop) that enroll with incumbent insurers after the termination in treated municipalities (see Appendix Figure 10).

For the average enrollee, the number of claims decreased by a greater magnitude than their healthcare spending, suggesting that claim prices increased after the termination as seen in Panel C. I estimate an increase in claim prices equal to 8% by the end of the sample period. Appendix Figures 11 and 12 show that reductions in utilization and spending are robust to using an unbalanced panel of insurers and to

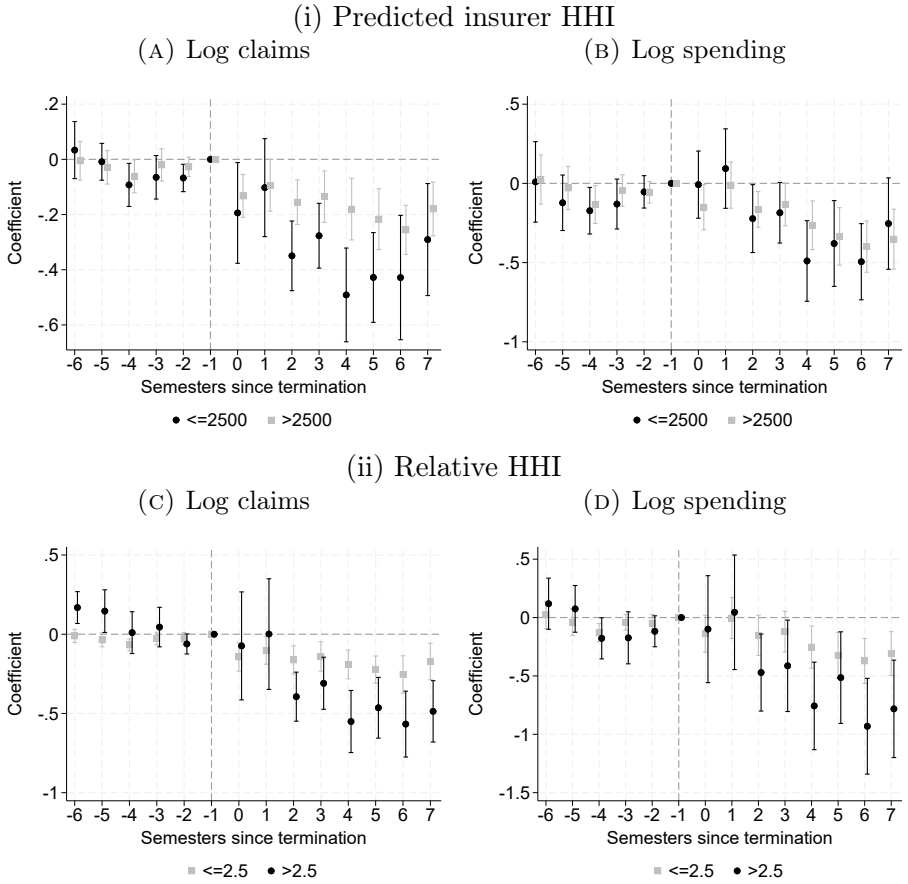
excluding markets where SaludCoop hospitals had more than 1% market share in total healthcare spending per municipality, respectively.

Higher claim prices and increased use of FFS are both consistent with providers' bargaining leverage increasing relative to insurers' in treated markets after the termination. However, the relatively large reductions in utilization and spending per enrollee can also be due to factors other than the use of FFS contracts. Such factors may include provider exclusions from insurers' networks as a cream-skimming mechanism and resulting congestion in the network (see e.g., Buitrago et al., 2024). For instance, it may be the case that incumbent insurers narrow their provider networks after the termination to attract healthier enrollees who have a lower preference for broad networks, who are more price sensitive, and who make fewer claims than sick enrollees (Shepard, 2022).[13] It also may be the case that narrow provider networks coupled with the influx of SaludCoop's enrollees generate a congestion effect that limits consumers' ability to make health claims and contribute to the long-term reductions in utilization.

Panels D to F of Figure 3 examine trends in utilization of specific services such as the log of doctor consultations, the log of the number of urgent care claims, and the log of the number of inpatient claims per enrollee, respectively. Results show large and statistically significant reductions in utilization of mostly discretionary services such as doctor consultations, but show smaller reductions in utilization of complex services related to inpatient care. Appendix Figure 6 reports event study results for healthcare spending per enrollee associated with these services.

[13] Provider networks are a salient cream-skimming mechanism because insurers in Colombia compete only on which and how many providers they include in their networks and other elements of the insurance contract are closely regulated.

FIGURE 4: Impact of insurer exit on utilization and spending per enrollee by HHI



Note: Figure presents coefficients and 95% confidence intervals of the dynamic *did* design using at outcomes the log total claims per enrollee and the log of total spending per enrollee. Panels A and B explore the heterogeneity of treatment effects by insurer HHI in 2014. Insurer HHI is calculated using predicted insurer market shares on the number of enrollees assuming that SaludCoop's enrollees are reassigned to incumbent insurers in proportion to their observed market shares. The group with insurer HHI $\leq$ 2500 represents 59% of enrollees and the group with HHI$>$ 2500 represents 41% of enrollees. Panels C and D explore the heterogeneity of treatment effects by relative insurer to provider HHI in 2014. Provider HHI is calculated based on provider market shares in total healthcare costs. The group with relative HHI$\leq$ 2.5 represents 46% of enrollees and the group with relative HHI$>$ 2.5 represents 54% of enrollees. Treated units are municipalities where SaludCoop operated in 2015. Control units are municipalities where SaludCoop did not operate. All specifications include insurer, municipality, and semester fixed effects. Standard errors are clustered at the municipality level.

Given that market concentration affects the choice of contracts as seen in the previous section, which may in turn impact the type of care that patients receive, Figure 4 explores the heterogeneity of treatment effects on utilization and spending by HHI. The figure presents results by insurer HHI during 2014 in the top panel and by relative insurer to provider HHI during 2014 in the bottom panel. Insurer and

relative HHIs are calculated as in Figure 2. Panels A and B show that reductions in the number of claims and healthcare spending per enrollee after the termination are larger in markets where predicted insurer HHI is relatively low. For example, in markets where the HHI is less than or equal to 2,500, there is a 30% decline in the number of claims on average in the post-period. This is in contrast to the 20% decline in markets with insurer HHI above 2,500.

When compared to provider HHI, Panels C and D show that markets with higher insurer than provider concentration saw larger reductions in the number of claims and healthcare spending per enrollee after the termination. If relative HHI determines the bargaining leverage, then Panel C shows that the number of claims per enrollee decreased around 36% on average after the termination in markets where insurers have higher bargaining leverage depicted in black. But, there was only a 17% decline in utilization in markets where providers have relatively higher bargaining leverage depicted in gray.

6 Conclusions

This paper examines health insurer and healthcare provider market structure as determinants of contract choice in healthcare. Market structure is characterized by insurer and provider market concentration, and the focus is on the choice between fee-for-service (FFS) and capitation contracts. The paper uses a unique dataset from the Colombian health care system that reports the payment type (FFS/capitation) and prices that insurers sign with providers for every health service. I leverage the exogenous termination of the largest health insurer in the country and its hospitals to quantify how contract choice and healthcare market outcomes change after the termination. Then, I explore market concentration as the mechanism behind these

effects.

Findings show that equilibrium contracts are ones that place the financial risk on insurers –such as FFS contracts– in markets where providers have higher bargaining leverage. Findings also show that healthcare utilization and spending are lower in relatively concentrated insurance markets. These results indicate that factors that affect the value of negotiations between insurers and providers can directly impact intensity of care and spending in health systems with managed care competition. Changes in healthcare delivery brought by changes in insurer-provider negotiations may also have downstream effects on patient health. Understanding factors that influence patient health and healthcare delivery is the ultimate goal of health policy.

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