Online Appendix: Exogenous Exits, Market Structure, and Equilibrium Contracts in Healthcare

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1 Data cleaning

At the end of every year insurers in the contributory healthcare system report to the government all the health claims that they reimbursed providers for. The data for this paper are these claims reports to the government. The government uses the claims data to calculate and update the risk-adjusted transfers that it makes to insurers. To do so, it imposes several data quality filters. The filters make it so that not every insurer that reports claims ends up in the final data set. Of the 19 insurers that participate in the contributory system, 13 are observed in the claims data. Excluding insurers that are terminated by the government during the sample period (SaludCoop in 2015 and Cafesalud in 2019), of the 11 remaining insurers, I observe 6 of them during all 7 years, and 10 of them for at least 4 years. I use the subsample of claims associated with these 10 insurers, which exclude SaludCoop

(EPS013), Cafesalud (EPS003), and Cruz Blanca (EPS023). Appendix Table 1 shows the total number of enrollees in the contributory system, the fraction represented by insurers that pass the government's data quality filters, the fraction represented by insurers in the input data set for my empirical analysis, and the fraction in my final balanced panel of insurer-provider-municipalities for the contract choice analysis and in the balanced panel of insurer-municipalities for the healthcare outcomes analysis.

APPENDIX TABLE 1: Number of enrollees after sample restrictions

Year	Total enrollees (1)	Fraction in claims (2)	Fraction in sample (3)
Panel A.			
2013	20,437,523	0.959	0.600
2014	21,675,193	0.967	0.599
2015	25,464,728	0.995	0.514
2016	22,402,988	0.993	0.631
2017	26,312,759	0.857	0.571
2018	22,274,235	0.852	0.683
2019	23,422,474	0.881	0.705
Pooled (2013-2019)	26,312,759	0.963	0.628
Panel B.			
Contract choice	—	—	0.613
Healthcare outcomes	—	—	0.620

Note: Panel A of the table reports the yearly number of enrollees and pooled number of enrollees in the contributory system in column (1), the fraction of enrollees represented by insurers that pass the Ministry of Health's data quality filters in column (2), and the fraction of enrollees represented by insurers in my final data sets in column (3). Panel B of the table reports the pooled fraction of enrollees represented by insurers and municipalities in my final data sets for the contract choice and healthcare outcomes analyses. Insurers with less that 0.005% market share in a municipality are dropped for calculating the total number of enrollees.

To organize the data for the contract choice analysis I proceed in following steps:

1. Aggregate the claims data to the insurer, provider, 4-digit service code, municipality, and semester level. Contracts are negotiated at this level of aggregation for 96.16% of observations, that is, conditional on an insurer-provider-service-semester there is no variation in FFS. For the remaining 3.84% of observations, I assume the contract is FFS if the total FFS cost is greater than the total capitation cost.

Service codes are 6-digit codes associated with each service covered in the national health insurance plan. The first 2 digits represent the anatomic area, the third digit represents the type of procedure, and the fourth to sixth digits give more detailed information on the procedure. For example, service 883220 is a simple thoracic spine magnetic resonance imaging and service 883221 is a thoracic spine magnetic resonance imaging with contrasting liquid. In this example, 88 refers to imaging, 3 to magnetic resonance imaging, and 22 to thoracic spine.

2. To avoid making inference off of services that very few providers can deliver, drop service categories with less than 50 insurer-provider pairs during the sample period and keep insurer-provider-services that are observed for more than 4 semesters. All my results are robust to more stringent or lenient sample restrictions as seen in Appendix 4.

3. Fill in missing semesters conditional on each insurer-provider-service tuple. For example, if I observe the tuple in 2017-2 and in 2019-1, I fill in observations for 2018-1 and 2018-2 replacing measures of utilization and costs by zero and carrying forward the last observed contract. In the final data set, 11.39% of observations correspond to these filled-in values.

4. Aggregate the data to the insurer, provider, municipality, and semester level, calculating the fraction of (4-digit) services covered under FFS, total number of claims, total healthcare cost, and number of inpatient claims, ambulatory claims, urgent care claims, and consultations.

5. Exclude SaludCoop, Cafesalud, and Cruz Blanca.

6. Keep a balanced panel of insurer-provider-municipalities. Results are robust in

the unbalanced panel as well as seen in Appendix 4.

To organize the data for the healthcare outcomes analysis I proceed in the following steps:

1. Aggregate the claims data to the insurer, municipality, and semester level, calculating total healthcare cost, total number of claims, and number of claims in specific service categories.

2. Merge number of enrollees per insurer, municipality, and semester, to calculate measures of healthcare utilization and spending per enrollee.

3. Exclude SaludCoop, Cafesalud, and Cruz Blanca.

4. Keep a balanced panel of insurer-municipalities. Results are robust in the unbalanced panel as well as seen in Appendix 4.

2 Descriptive evidence

This appendix presents additional descriptive evidence. Appendix Figure 1 presents the fraction of insurer-provider pairs that use a FFS contract during 2014. Appendix Figure 2 presents a time series of insurer and provider HHI in Panels A and B, respectively. Insurer HHI is calculated based on market shares in the number of enrollees per municipality. Provider HHI is calculated based on market shares in total healthcare spending per municipality. In each panel the HHIs are averaged across municipalities weighting by number of enrollees and total healthcare spending, respectively. Appendix Figure 3 presents the distribution of insurer HHI by the number of enrollees conditional on treated municipalities in the left panel and conditional on control municipalities in the right panel. The distribution for the pre-period is presented in

gray and the distribution for the post-period is presented in black. Appendix Table 2 presents pooled *did* results including municipality, semester, and insurer-by-provider fixed effects, as well as time-varying insurer HHI in the number of enrollees and provider HHI in total healthcare spending.

APPENDIX FIGURE 1: Fraction of insurer-provider pairs with a FFS contract
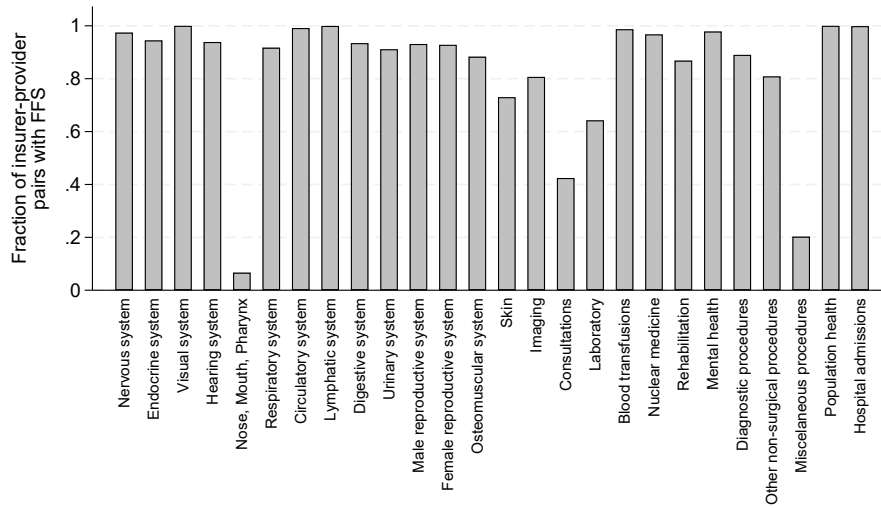

Note: Figure presents the fraction of insurer-provider pairs, weighted by number of claims, that use a FFS for each service in the horizontal axis during 2014. Figure uses data at the insurer-provider-service-municipality level.

APPENDIX FIGURE 2: Average municipal HHI

(A) Insurer

(B) Provider
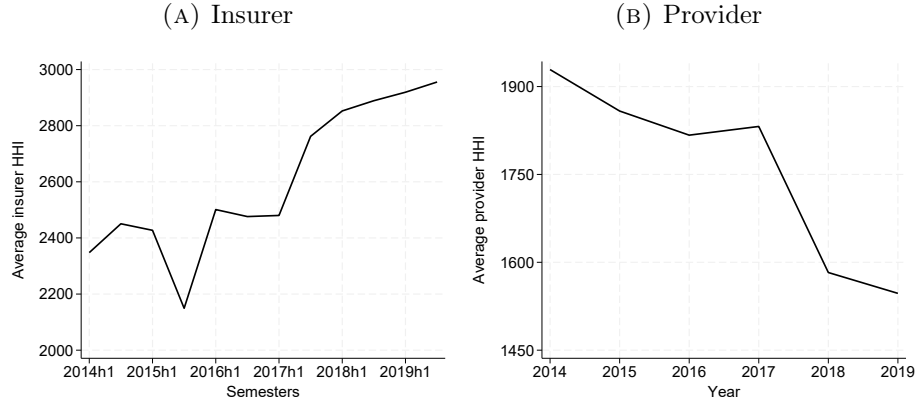
Note: Panel A presents average insurer HHI across municipalities weighted by the number of enrollees in the municipality, from the first half of 2014 to the second half of 2019. Insurer HHI is calculated based on market share in the number of enrollees. Insurers with less than 0.005% market share in a municipality are excluded. Panel B presents average provider HHI across municipalities weighted by total healthcare costs in the municipality, from 2014 to 2019. Provider HHI is calculated based on market shares in total healthcare costs.

APPENDIX FIGURE 3: Distribution of insurer HHI
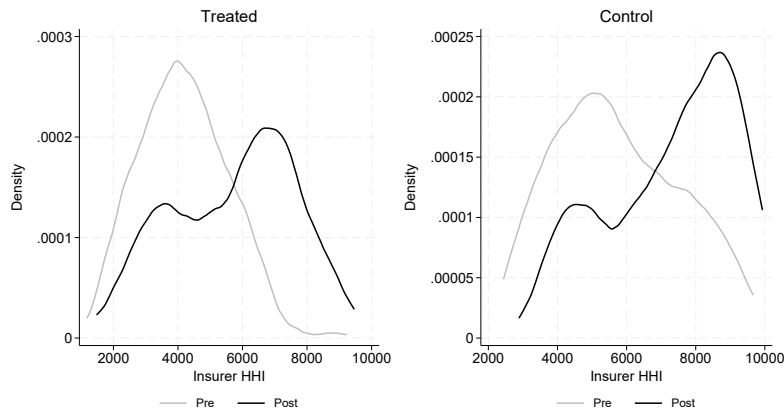
Note: Panel A presents the distribution of insurer HHI across (treated) municipalities where SaludCoop operated, separately for the pre-termination period (2013-2015) in gray and the post-termination period (2016-2019) in black. Panel B presents the distribution of insurer HHI across (control) municipalities where SaludCoop did not operate, separately for the pre-termination period (2013-2015) in gray and the post-termination period (2016-2019) in black. Insurer HHI is calculated based on market shares on the number of enrollees in each municipality.

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APPENDIX TABLE 2: Treatment effect conditional on insurer and provider HHI

	Fraction FFS	
	(1)	(2)
Treated×Post	0.0194	0.0192
	(0.0058)	(0.0059)
Insurer HHI	-0.0329	-0.0328
	(0.0119)	(0.0120)
Provider HHI	0.0138	0.0117
	(0.0094)	(0.0091)
Fixed effects		
Municipality	Y	Y
Semester	Y	Y
Insurer-provider	—	Y
N	116,226	116,226

Note: Table presents an OLS regression of the fraction of services covered under FFS on the interaction between the treatment indicator and the post-period indicator, time-varying insurer HHI on the number of enrollees, and time-varying provider HHI on total healthcare costs. In column (1) the specification includes market and semester fixed effects. In column (2) insurer-by-provider fixed effects are added. Treated units are municipalities where SaludCoop operated in 2015. Control units are municipalities where SaludCoop did not operate. Standard errors reported in parenthesis are clustered at the municipality level.

3 Event study coefficients

This appendix presents coefficients and standard errors associated with each dynamic *did* result in the main text. It also reports coefficient plots for additional outcomes.

APPENDIX TABLE 3: Event study coefficients for contract choice

Relative time	(1) Main		(2) SaludCoop hosp share	
	coef	se	coef	se
-6	-0.0035	(0.0036)	-0.0025	(0.0050)
-5	-0.0037	(0.0031)	-0.0019	(0.0041)
-4	-0.0067	(0.0035)	-0.0053	(0.0047)
-3	-0.0049	(0.0036)	-0.0032	(0.0042)
-2	0.0012	(0.0018)	0.0011	(0.0025)
-1	—	—	—	—
0	0.0200	(0.0058)	0.0167	(0.0047)
1	0.0249	(0.0081)	0.0205	(0.0069)
2	0.0314	(0.0092)	0.0270	(0.0059)
3	0.0350	(0.0093)	0.0308	(0.0067)
4	0.0294	(0.0105)	0.0229	(0.0098)
5	0.0310	(0.0125)	0.0229	(0.0112)
6	0.0428	(0.0132)	0.0356	(0.0131)
7	0.0581	(0.0155)	0.0470	(0.0190)

Note: Table presents coefficients and standard errors in parenthesis of the event study specification following equation (1) using as outcome variable the fraction of services covered under fee-for-service for every insurer-provider pair. Column (1) presents the main specification and column (2) presents the specification that drops markets where SaludCoop hospitals had more than 1% market share in total healthcare spending. Treated units are municipalities where SaludCoop operated in 2015. Control units are municipalities where SaludCoop did not operate. All specifications contain insurer, municipality, and semester fixed effects. Standard errors are clustered at the municipality level.

APPENDIX TABLE 4: Event study coefficients for contract choice by predicted insurer HHI

	(1) HHI ≤ 2500		(2) HHI>2500	
Relative time	coef	se	coef	se
-6	-0.0071	(0.0039)	-0.0014	(0.0049)
-5	-0.0094	(0.0033)	-0.0004	(0.0043)
-4	-0.0101	(0.0025)	-0.0051	(0.0041)
-3	-0.0102	(0.0028)	-0.0023	(0.0039)
-2	-0.0003	(0.0024)	0.0022	(0.0017)
-1	—	—	—	—
0	0.0279	(0.0053)	0.0147	(0.0068)
1	0.0394	(0.0068)	0.0153	(0.0083)
2	0.0450	(0.0055)	0.0222	(0.0073)
3	0.0498	(0.0057)	0.0251	(0.0077)
4	0.0461	(0.0094)	0.0183	(0.0089)
5	0.0560	(0.0093)	0.0150	(0.0095)
6	0.0639	(0.0108)	0.0287	(0.0117)
7	0.0971	(0.0148)	0.0315	(0.0138)

Note: Table presents coefficients and standard errors in parenthesis of the event study specification following equation (1) using as outcome variable the fraction of services covered under fee-for-service. Treated units are municipalities where SaludCoop operated in 2015. Control units are municipalities where SaludCoop did not operate. Column (1) uses the subsample of treated markets with insurer HHI less than or equal to 2500 and column (2) with insurer HHI above 2500. 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. Column (1) represents 52% of enrollees and column (2) represents 48% of enrollees. All specifications include insurer, municipality, and semester fixed effects. Standard errors are clustered at the municipality level.

APPENDIX TABLE 5: Event study coefficients for contract choice by relative insurer-provider HHI

	(1) Rel. HHI<=2.5		(3) Rel. HHI>2.5	
Rel. time	coef	se	coef	se
-6	-0.0002	(0.0044)	-0.0059	(0.0132)
-5	0.0008	(0.0045)	-0.0069	(0.0085)
-4	-0.0022	(0.0052)	-0.0081	(0.0051)
-3	0.0001	(0.0046)	-0.0070	(0.0053)
-2	0.0027	(0.0021)	0.0015	(0.0054)
-1	—	—	—	—
0	0.0187	(0.0038)	-0.0211	(0.0085)
1	0.0211	(0.0052)	-0.0044	(0.0351)
2	0.0290	(0.0079)	-0.0045	(0.0318)
3	0.0303	(0.0076)	0.0051	(0.0366)
4	0.0239	(0.0118)	-0.0456	(0.0301)
5	0.0241	(0.0110)	-0.0540	(0.0349)
6	0.0377	(0.0104)	-0.0256	(0.0469)
7	0.0418	(0.0134)	-0.0394	(0.0437)

Note: Table presents coefficients and standard errors in parenthesis of the event study specification following equation (1) using as outcome variable the fraction of services covered under fee-for-service. Treated units are municipalities where SaludCoop operated in 2015. Control units are municipalities where SaludCoop did not operate. Column (1) uses the subsample of treated markets with relative insurer to provider HHI less than or equal to 2.5 and column (2) with relative HHI above 2.5. 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. Provider HHI is calculated based on provider market shares in total healthcare spending. Column (1) represents 52% of enrollees and column (2) represents 48% of enrollees. All specifications include insurer, municipality, and semester fixed effects. Standard errors are clustered at the municipality level.

APPENDIX TABLE 6: Event study coefficients for utilization and spending per enrollee

	Log claims		Log spending		Log claim price	
Relative time	coef	se	coef	se	coef	se
-6	0.0012	(0.0332)	0.0341	(0.0616)	0.0257	(0.0301)
-5	-0.0242	(0.0388)	-0.0277	(0.0741)	0.0053	(0.0315)
-4	-0.0620	0.0327	-0.1263	0.0659	-0.0369	0.0394
-3	-0.0224	(0.0255)	-0.0431	(0.0554)	-0.0257	(0.0322)
-2	-0.0313	(0.0192)	-0.0556	(0.0392)	0.0015	(0.0305)
-1	—	—	—	—	—	—
0	-0.1392	(0.0489)	-0.1364	(0.0736)	0.0165	(0.0280)
1	-0.0953	(0.0499)	-0.0012	(0.0731)	0.0309	(0.0329)
2	-0.1761	(0.0494)	-0.1704	(0.0743)	0.0871	(0.0270)
3	-0.1503	(0.0402)	-0.1378	(0.0667)	0.0605	(0.0223)
4	-0.2128	(0.0379)	-0.2837	(0.0641)	0.0574	(0.0434)
5	-0.2383	(0.0371)	-0.3350	(0.0812)	0.0333	(0.0301)
6	-0.2729	(0.0555)	-0.4037	(0.0743)	0.1363	(0.0294)
7	-0.1903	(0.0678)	-0.3356	(0.1073)	0.0785	(0.0430)

Note: Table presents coefficients and standard errors in parenthesis of the event study specification following equation (1) using as outcome variable the log of number of claims per enrollee in column (1), the log of healthcare spending per enrollee in column (2), and the log of average claim price in column (3). 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.

APPENDIX TABLE 7: Event study coefficients for utilization and spending per enrollee per service

	Log consultations		Log ER claims		Log inpatient claims	
Relative time	coef	se	coef	se	coef	se
-6	-0.0106	(0.0235)	0.0346	(0.0283)	-0.0244	(0.0093)
-5	-0.0258	(0.0283)	0.0140	(0.0269)	-0.0296	(0.0110)
-4	-0.0434	(0.0267)	0.0088	(0.0203)	-0.0233	(0.0126)
-3	-0.0173	(0.0210)	0.0178	(0.0206)	0.0118	(0.0169)
-2	-0.0166	(0.0160)	0.0021	(0.0120)	-0.0108	(0.0103)
-1	—	—	—	—	—	—
0	-0.1190	(0.0382)	-0.0984	(0.0400)	-0.0788	(0.0293)
1	-0.0824	(0.0411)	-0.0759	(0.0397)	-0.0608	(0.0287)
2	-0.1309	(0.0373)	-0.1380	(0.0299)	-0.0727	(0.0329)
3	-0.1069	(0.0324)	-0.1378	(0.0295)	-0.0827	(0.0258)
4	-0.1609	(0.0339)	-0.2050	(0.0393)	-0.0715	(0.0248)
5	-0.1558	(0.0318)	-0.2080	(0.0350)	-0.0969	(0.0221)
6	-0.2082	(0.0536)	-0.2754	(0.0469)	-0.0864	(0.0294)
7	-0.1480	(0.0603)	-0.2328	(0.0519)	-0.1223	(0.0281)

Note: Table presents coefficients and standard errors in parenthesis of the event study specification following equation (1) using as outcome variable the log of number of consultation per enrollee in column (1), the log of ER claims per enrollee in column (2), and the log of inpatient claims per enrollee in column (3). 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.

APPENDIX TABLE 8: Event study coefficients for log number of claims per enrollee by HHI

| Relative time	coef	se	coef	se
Panel A	(1) HHI<=2500		(2) HHI>2500	
-6	0.0336	(0.0528)	-0.0055	(0.0355)
-5	-0.0088	(0.0341)	-0.0288	(0.0310)
-4	-0.0926	(0.0399)	-0.0612	(0.0305)
-3	-0.0650	(0.0402)	-0.0202	(0.0299)
-2	-0.0674	(0.0253)	-0.0273	(0.0179)
-1	—	—	—	—
0	-0.1941	(0.0931)	-0.1326	(0.0396)
1	-0.1024	(0.0905)	-0.0940	(0.0479)
2	-0.3495	(0.0644)	-0.1550	(0.0412)
3	-0.2768	(0.0599)	-0.1349	(0.0474)
4	-0.4913	(0.0867)	-0.1804	(0.0568)
5	-0.4279	(0.0829)	-0.2167	(0.0562)
6	-0.4284	(0.1150)	-0.2557	(0.0454)
7	-0.2907	(0.1036)	-0.1798	(0.0496)
Panel B	(1) Relative HHI<=2.5		(2) Relative HHI>2.5	
-6	-0.0103	(0.0211)	0.1682	(0.0512)
-5	-0.0354	(0.0226)	0.1459	(0.0686)
-4	-0.0673	(0.0194)	0.0101	(0.0674)
-3	-0.0277	(0.0203)	0.0451	(0.0637)
-2	-0.0293	(0.0203)	-0.0615	(0.0322)
-1	—	—	—	—
0	-0.1433	(0.0458)	-0.0736	(0.1739)
1	-0.1014	(0.0449)	0.0011	(0.1781)
2	-0.1622	(0.0453)	-0.3942	(0.0790)
3	-0.1401	(0.0474)	-0.3095	(0.0838)
4	-0.1906	(0.0461)	-0.5510	(0.1000)
5	-0.2234	(0.0438)	-0.4641	(0.0977)
6	-0.2541	(0.0602)	-0.5672	(0.1061)
7	-0.1714	(0.0585)	-0.4867	(0.0988)

Note: Table presents coefficients and standard errors in parenthesis of the event study specification following equation (1) using as outcome variable the log of number of claims per enrollee. In panel A, column (1) uses the subsample of treated markets with insurer HHI less than or equal to 2500 and column (2) with insurer HHI above 2500. 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. Column (1) represents 59% of enrollees and column (2) represents 41% of enrollees. In panel B, column (1) uses the subsample of treated markets with relative insurer to provider HHI less than or equal to 2.5 and column (2) with relative HHI above 2.5. Provider HHI is calculated based on provider market shares in total healthcare costs. Column (1) represents 46% of enrollees and column (2) 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.

APPENDIX TABLE 9: Event study coefficients for log healthcare spending per enrollee by HHI

| Relative time	coef	se	coef	se
Panel A	(1) HHI<=2500		(2) HHI>2500	
-6	0.0094	(0.1296)	0.0244	(0.0791)
-5	-0.1225	(0.0894)	-0.0290	(0.0696)
-4	-0.1725	(0.0750)	-0.1335	(0.0609)
-3	-0.1305	(0.0803)	-0.0449	(0.0506)
-2	-0.0536	(0.0522)	-0.0559	(0.0349)
-1	—	—	—	—
0	-0.0078	(0.1081)	-0.1502	(0.0730)
1	0.0935	(0.1279)	-0.0113	(0.0742)
2	-0.2224	(0.1093)	-0.1643	(0.0573)
3	-0.1855	(0.0974)	-0.1323	(0.0691)
4	-0.4897	(0.1298)	-0.2640	(0.0785)
5	-0.3797	(0.1382)	-0.3347	(0.0925)
6	-0.4944	(0.1226)	-0.3990	(0.0827)
7	-0.2536	(0.1471)	-0.3517	(0.0964)
Panel B	(1) Relative HHI<=2.5		(2) Relative HHI>2.5	
-6	0.0221	(0.0594)	0.1184	(0.1117)
-5	-0.0401	(0.0585)	0.0742	(0.1021)
-4	-0.1293	(0.0394)	-0.1779	(0.0897)
-3	-0.0414	(0.0342)	-0.1738	(0.1137)
-2	-0.0516	(0.0402)	-0.1178	(0.0677)
-1	—	—	—	—
0	-0.1388	(0.0809)	-0.0995	(0.2337)
1	-0.0043	(0.0898)	0.0449	(0.2503)
2	-0.1516	(0.0880)	-0.4712	(0.1683)
3	-0.1206	(0.0890)	-0.4135	(0.1997)
4	-0.2533	(0.0925)	-0.7571	(0.1911)
5	-0.3235	(0.1006)	-0.5146	(0.2002)
6	-0.3717	(0.0983)	-0.9310	(0.2094)
7	-0.3087	(0.0958)	-0.7821	(0.2128)

Note: Table presents coefficients and standard errors in parenthesis of the event study specification following equation (1) using as outcome variable the log of healthcare spending per enrollee. In panel A, column (1) uses the subsample of treated markets with insurer HHI less than or equal to 2500 and column (2) with insurer HHI above 2500. 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. Column (1) represents 59% of enrollees and column (2) represents 41% of enrollees. In panel B, column (1) uses the subsample of treated markets with relative insurer to provider HHI less than or equal to 2.5 and column (2) with relative HHI above 2.5. Provider HHI is calculated based on provider market shares in total healthcare costs. Column (1) represents 46% of enrollees and column (2) 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.

APPENDIX FIGURE 4: Impact of exogenous exits on contract choice by type of service
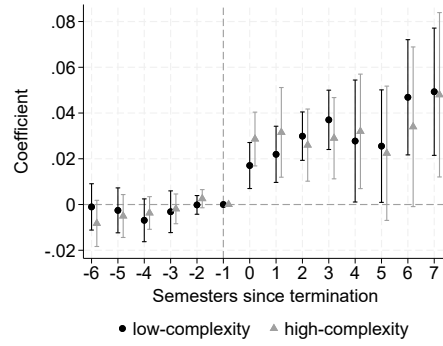
Note: Figure presents coefficients and 95% confidence intervals of a dynamic *did* design. The outcome variable is the fraction of services covered under FFS. Treated units are municipalities where SaludCoop operated in 2015. Control units are municipalities where SaludCoop did not operate. Estimates in black use the subsample of consultation, laboratory, imaging, and nuclear medicine services (low-complexity). Estimates in gray use the rest of services (high-complexity). All specifications include insurer, municipality, and semester fixed effects. Standard errors are clustered at the municipality level.

APPENDIX FIGURE 5: Impact of exogenous exits on contract choice by fraction sick and provider size
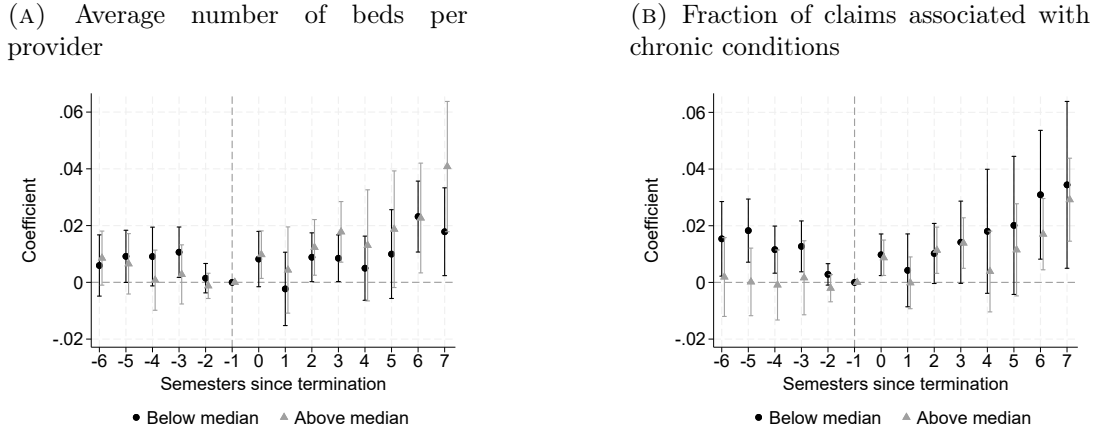
(A) Average number of beds per provider

(B) Fraction of claims associated with chronic conditions

● Below median   ▲ Above median

● Below median   ▲ Above median

Note: Figure presents coefficients and 95% confidence intervals of a dynamic *did* design. The outcome variable is the fraction of services covered under FFS. Panel A explores the heterogeneity of treatment effects by average number of beds per provider during 2014. Estimates in black use the subsample of markets where the average provider has less than 50 beds (below median). Estimates in gray use the subsample of markets where the average provider has 50 beds or more (above median). Panel B explores the heterogeneity of treatment effects by fraction of claims associated with chronic conditions in 2014. Estimates in black use the subsample of markets where less than 5% of claims correspond to chronic conditions (below median). Estimates in gray use the subsample of markets where 5% or more claims correspond to chronic conditions (above median). 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.

APPENDIX FIGURE 6: Impact of insurer exit on spending per service per enrollee
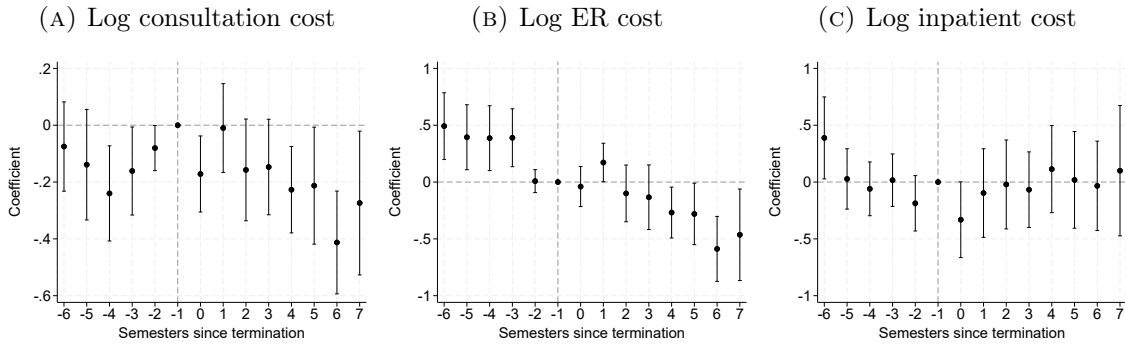
(A) Log consultation cost

(B) Log ER cost

(C) Log inpatient cost

Note: Figure presents coefficients and 95% confidence intervals of the dynamic *did* design using as outcomes the log of spending in consultations per enrollee in panel A, the log of spending in ER in panel B, and the log of spending in inpatient services in panel C. 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.

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4 Robustness checks

This appendix presents robustness checks on sample construction for the event study using as outcome the fraction of services covered under FFS.

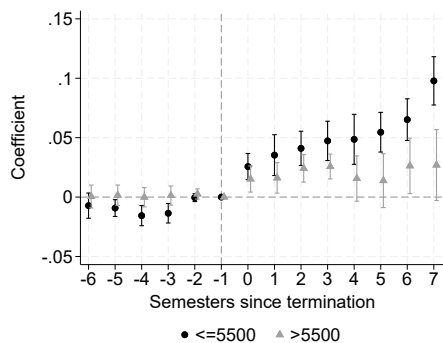APPENDIX FIGURE 7: Robustness of FFS use in unbalanced panel
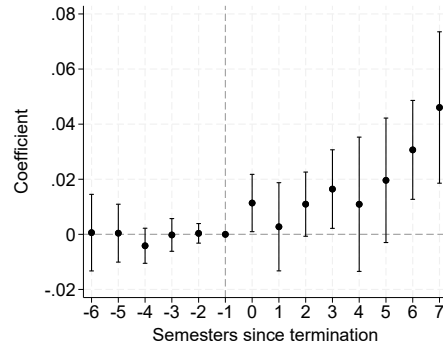
Note: Figure presents coefficients and 95% confidence intervals of a dynamic *did* design. The outcome variable is the fraction of services covered under FFS. Estimation uses an unbalanced panel of insurer-provider pairs created by dropping step 6 of the data cleaning procedure. Treated units are municipalities 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.

APPENDIX FIGURE 8: Robustness on sample construction
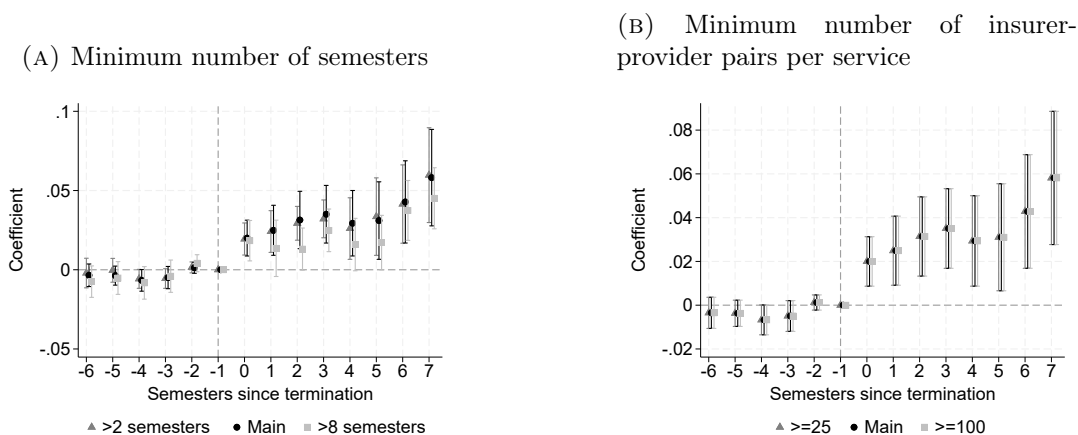
(A) Minimum number of semesters

(B) Minimum number of insurer-provider pairs per service

Note: Figure presents coefficients and 95% confidence intervals of a dynamic *did* design. The outcome variable is the fraction of services covered under FFS. Panel A presents robustness checks on the minimum number of semesters for including an insurer-provider-service tuple in the final data in step 2 of the data cleaning procedure. Estimates in black are the main specification that conditions on observing insurer-provider-service tuples for more than 4 semesters. Estimates in dark gray condition on observing them for more than 2 semesters. Estimates in light gray condition on observing them for more than 8 semesters. Panel B presents robustness checks on the minimum number of insurer-provider pairs observed for each service for inclusion in the final data in step 2 of the data cleaning procedure. Estimates in black are the main specification that conditions on observing 50 or more insurer-provider pairs for every service. Estimates in dark gray condition on observing 25 or more insurer-provider pairs for every service. Estimates in light gray condition on observing 100 or more insurer-provider pairs for every service. 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.

APPENDIX FIGURE 9: Robustness of FFS outcomes on market definition for insurer HHI

Note: Figure presents coefficients and 95% confidence intervals of a dynamic *did* design. The outcome variable is the fraction of services covered under FFS. Estimates in black use the subsample of treated markets with average insurer HHI less than or equal to 5500. Estimates in gray use the subsample of treated markets with average insurer HHI greater than 5500. Average insurer HHI is calculated based on insurer market shares in total healthcare spending per service-municipality in 2014. This HHI is then averaged across services within each municipality weighting by number of claims per service. 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.

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APPENDIX FIGURE 10: Impact of insurer exit on enrollment at incumbent insurers
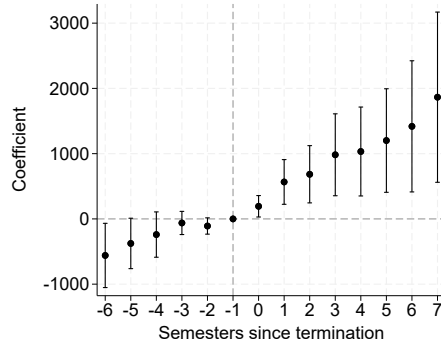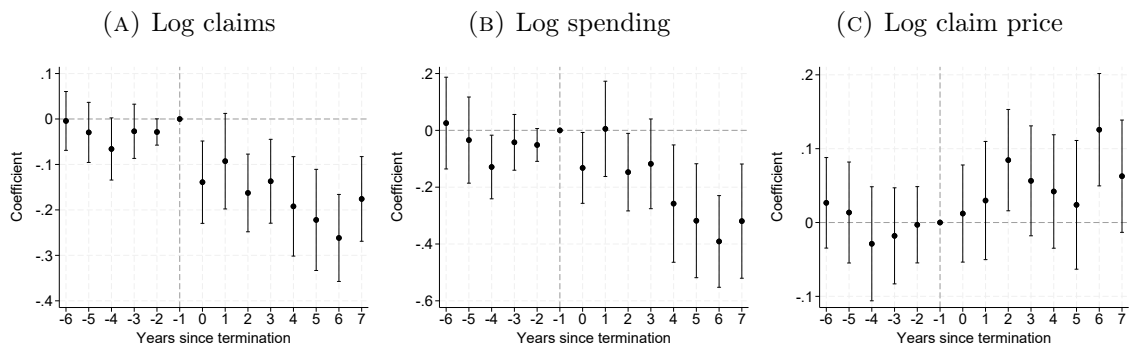

Note: Figure presents coefficients and 95% confidence intervals of the dynamic *did* design using as outcomes the number of enrollees. Treated units are municipalities where SaludCoop operated in 2015. Control units are municipalities where SaludCoop did not operate. Specification includes insurer, municipality, and semester fixed effects. Standard errors are clustered at the municipality level.

APPENDIX FIGURE 11: Robustness of utilization and spending per enrollee in unbalanced panel
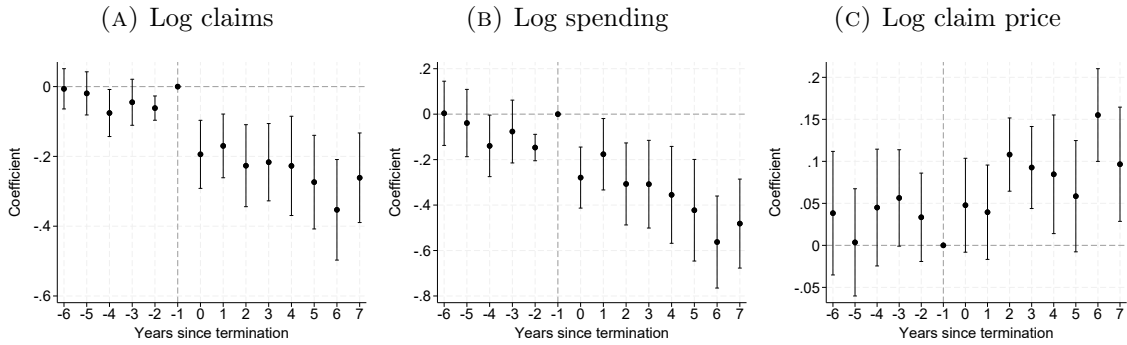
(A) Log claims (B) Log spending (C) Log claim price

Note: Figure presents coefficients and 95% confidence intervals of the dynamic *did* design using as outcomes the log of spending in consultations per enrollee in panel A, the log of spending in ER in panel B, and the log of spending in inpatient services in panel C. Estimation uses an unbalanced panel of insurers by dropping step 4 from the data cleaning procedure for the healthcare outcomes analysis. 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.

APPENDIX FIGURE 12: Robustness of utilization and spending per enrollee to excluding markets with SaludCoop hospitals

(A) Log claims   (B) Log spending   (C) Log claim price

Note: Figure presents coefficients and 95% confidence intervals of the dynamic *did* design using as outcomes the log of spending in consultations per enrollee in panel A, the log of spending in ER in panel B, and the log of spending in inpatient services in panel C. Estimation drops municipalities where SaludCoop hospitals had more than 1% market share in total healthcare costs in 2014. 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.

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