Online Appendix: Not for Publication

Who Benefits from Information Disclosure? The Case of Retail Gasoline

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A Model: Nash Bargaining Solution

In this Appendix, I propose a different solution concept to the model introduced in the main text. To obtain unique predictions for equilibrium prices and price dispersion under coordination, the model in the text assumed that the firm for which consumers are willing to pay more (firm A) made a take-it-or-leave-it offer that left firm B indifferent between coordinating and deviating. Here, instead, I study how market outcomes that follow from the solution to the Nash bargaining model change as both the fraction of informed consumers and the time it takes to observe deviations by rivals changes. In all other aspects, the model is identical to that presented in the main text.

In order to simplify exposition, I first introduce some notation. Let discounted payoffs under coordination be

$$\begin{aligned}
\Pi_A^C(p_A^C, p_B^C) &= \int_0^\infty \frac{p_A^C}{2}\Big(1 + \frac{\phi}{t}(\Delta + p_B^C - p_A^C)\Big)e^{-rz}dz \\
&= \frac{p_A^C}{2r}\Big(1 + \frac{\phi}{t}(\Delta + p_B^C - p_A^C)\Big) \\
\Pi_B^C(p_A^C, p_B^C) &= \int_0^\infty \frac{p_B^C}{2}\Big(1 - \frac{\phi}{t}(\Delta + p_B^C - p_A^C)\Big)e^{-rz}dz \\
&= \frac{p_B^C}{2r}\Big(1 - \frac{\phi}{t}(\Delta + p_B^C - p_A^C)\Big).
\end{aligned}$$

Let discounted payoffs under deviation be

$$\Pi_A^D(p_B^C) = \frac{(t+\phi\Delta+\phi p_B^C)^2}{8\phi rt}(1-e^{-rz^*}) + \frac{(3t+\Delta\phi)^2}{18\phi rt}e^{-rz^*}$$
$$\Pi_B^D(p_A^C) = \frac{(t-\phi\Delta+\phi p_A^C)^2}{8\phi rt}(1-e^{-rz^*}) + \frac{(3t-\Delta\phi)^2}{18\phi rt}e^{-rz^*}$$

Then, coordination prices that are a solution to the Nash bargaining problem with equal bargaining weights solve

$$\max_{p_A^C, p_B^C} \quad \Big(\Pi_A^C(p_A^C, p_B^C) - \Pi_A^D(p_B^C)\Big)^{\frac{1}{2}} \Big(\Pi_B^C(p_A^C, p_B^C) - \Pi_B^D(p_A^C)\Big)^{\frac{1}{2}}.$$

The first-order conditions of this problem, without specifying the arguments for each expression, can be written as

$$\begin{aligned}
\frac{\partial}{\partial p_A^C} : \ & \frac{1}{2}\Big(\Pi_A^C - \Pi_A^D\Big)^{-\frac{1}{2}}\Big(\Pi_B^C - \Pi_B^D\Big)^{\frac{1}{2}}\left[\frac{\partial \Pi_A^C}{\partial p_A^C} - \frac{\partial \Pi_A^D}{\partial p_A^C}\right] + \\
& \frac{1}{2}\Big(\Pi_A^C - \Pi_A^D\Big)^{\frac{1}{2}}\Big(\Pi_B^C - \Pi_B^D\Big)^{-\frac{1}{2}}\left[\frac{\partial \Pi_B^C}{\partial p_A^C} - \frac{\partial \Pi_B^D}{\partial p_A^C}\right] = 0 \\
\frac{\partial}{\partial p_B^C} : \ & \frac{1}{2}\Big(\Pi_A^C - \Pi_A^D\Big)^{-\frac{1}{2}}\Big(\Pi_B^C - \Pi_B^D\Big)^{\frac{1}{2}}\left[\frac{\partial \Pi_A^C}{\partial p_B^C} - \frac{\partial \Pi_A^D}{\partial p_B^C}\right] + \\
& \frac{1}{2}\Big(\Pi_A^C - \Pi_A^D\Big)^{\frac{1}{2}}\Big(\Pi_B^C - \Pi_B^D\Big)^{-\frac{1}{2}}\left[\frac{\partial \Pi_B^C}{\partial p_B^C} - \frac{\partial \Pi_B^D}{\partial p_B^C}\right] = 0,
\end{aligned}$$

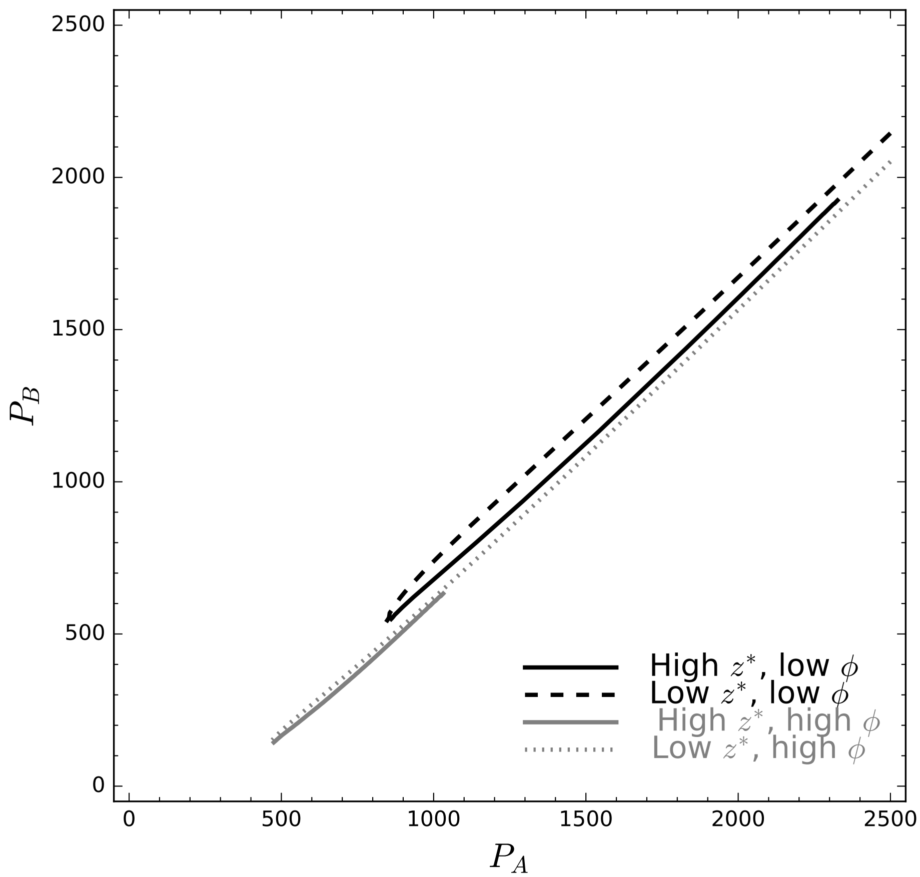
which can be simplified to

$$\frac{\left[\frac{\partial \Pi_B^C}{\partial p_A^C} - \frac{\partial \Pi_B^D}{\partial p_A^C}\right]}{\left[\frac{\partial \Pi_A^C}{\partial p_A^C} - \frac{\partial \Pi_A^D}{\partial p_A^C}\right]} = \frac{\left[\frac{\partial \Pi_B^C}{\partial p_B^C} - \frac{\partial \Pi_B^D}{\partial p_B^C}\right]}{\left[\frac{\partial \Pi_A^C}{\partial p_B^C} - \frac{\partial \Pi_A^D}{\partial p_B^C}\right]}, \tag{1}$$

which implicitly defines all pairs p_A^C and p_B^C that can be sustained under coordination for the Nash bargaining problem with equal bargaining weights of $\frac{1}{2}$. This relationship is presented in Figure A.1 for different values of the fraction of informed consumers ϕ and the time it takes to observe a deviation from a rival z^*.

Figure A.1 provides a number of useful insights. First, sustainable prices are below the 45-degree line (not shown) because of vertical differentiation. That is, firm A is able to charge higher prices.

Figure A.1: Equilibrium prices under Nash bargaining



The figure examines how the set of prices that are a solution to the Nash bargaining problem with equal bargaining weights varies with the fraction of informed consumers and the time it takes to observe deviations by rivals.

Second, the solid lines present two cases that differ in the fraction of informed consumers, for the same length of time that it takes to observe a deviation. That is, comparing the solid black (low ϕ) and gray (high ϕ) lines allows me to compare how increasing the fraction of informed consumers affects prices and price dispersion under coordination. This comparison gives two interesting results. First, price dispersion is lower when fewer consumers are informed, as the set of prices that is sustainable under coordination for low values of ϕ is closer to the 45-degree line than under higher values of ϕ. Second, prices are lower as more consumers are informed.

Third, same-colored lines (say, dashed black and solid gray) compare situations with the same fraction of informed consumers but different lengths of time that it takes to observe deviations from a rival. In both cases, we observe that dashed lines, which represent lower times needed to detect deviations, result in higher prices and lower price dispersion, consistent with the results presented in Figure 1 in Section II.

Finally, to compare how changes in both the fraction of informed consumers ϕ and the time it takes to observe deviations z^* affect market outcomes, we need to compare, for example, the solid black line (low ϕ, high z^*) with the dotted gray line (high ϕ, low z^*). In this case, the comparison is not obvious. On the one hand, for most price pairs it is possible to say that prices decrease when moving from the solid black to the dotted gray line. However, there is a region in which prices could be higher under the dotted gray line relative to the solid black one. Similarly, for most price pairs dispersion appears to be lower under the solid black line as it is closer to the 45-degree line, but depending on the parameter values, dispersion is lower under the dotted gray line for low price pairs. That is, the overall impact of information disclosure on market outcomes depends on the region in which outcomes lay as more consumers become informed and it takes firms less time to observe deviations.

B The Cities in the Data

The cities considered in this paper are determined by the data published by the CNE, which provides information on cities in six regions of the country. These cities are regional capitals, meaning that the regional administrative offices are located within them and they comprise most of the population (59.3 percent in 2012) and services in the region. Table B.1 summarizes demographic information at the municipality level obtained from the SINIM (2016) dataset. The table shows that, on average, these municipalities have slightly less than 200,000 people, the mean poverty rate is 12 percent, and very few people live in rural areas (and none in the city of Santiago). Hence, the cities studied in this paper are large relative to those in the rest of the country.

Table B.1: Summary statistics. Demographic information by municipality (year is 2013)

	Poverty rate (%)	Population	Rural population (% of total)
Valparaíso	16.13	267853	0.156
Rancagua	8.99	253189	4.46
Talca	17.51	253742	4.88
Concepción	21.48	230255	2.88
Punta Arenas	5.42	125712	2.16
Santiago	5.71	156049	0
Cerro Navia	14.64	129630	0
Conchalí	10.83	101796	0
Estación Central	17.61	107335	0
Independencia	8.23	48565	0
La Cisterna	7.46	68370	0
La Florida	9.21	396684	0
La Granja	15.94	120144	0
La Reina	7.12	94037	0
Las Condes	1.38	291971	0
Maipú	9.2	931211	0
Ñuñoa	5.16	140531	0
Quinta Normal	11.44	83187	0
Recoleta	11.53	119303	0
San Joaquín	26.87	73197	0
San Miguel	12.97	68855	0

Note: The table summarizes demographic information obtained from the SINIM (2016) dataset for each of the municipalities in the analysis. The first five municipalities correspond to cities other than Santiago. All municipalities that follow, starting with Santiago, are within the urban area of the city of Santiago (which explains why the rural population is zero for all of them). Further, though all municipalities located in cities other than Santiago do have rural population, the stations in the sample are located within their urban areas.

C Tables

C.1 Alternative mechanisms

In this Section, I explore five reasons that could lead to increasing margins following the implementation of online price disclosure.

First, I explore whether changes in margins could be explained by changes in city-specific pricing practices. To do this, I estimate a series of specifications that replicate the main regression but drop one city at a time. The results from this exercise are presented in Table C.1, where each column corresponds to a specification that does not consider the city that is specified at the top of each column. The results show that, though the point estimates do change when the cities under consideration change, the main finding remains, as margins increased between 8 and 11 percent.

TABLE C.1: Effect of disclosure on margins (Robustness analysis 1: excluding one city at a time)

	Dependent variable: margin_{it}					
	(1)	(2)	(3)	(4)	(5)	(6)
Excluding:	Valparaíso	Rancagua	Talca	Concepción	Punta Arenas	Santiago
Disclosure	6.857	5.284	6.455	5.463	7.999	7.997
	[0.038]**	[0.052]*	[0.032]**	[0.102]	[0.064]*	[0.066]**
Station FE	Yes	Yes	Yes	Yes	Yes	Yes
Cost controls	Yes	Yes	Yes	Yes	Yes	Yes
Region-specific trends	Yes	Yes	Yes	Yes	Yes	Yes
Year and month FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	69.74	66.02	68.98	66.65	70.594	82.899
Effect as percentage of mean dependent variable	9.83%	8.00%	9.36%	8.20%	11.33%	9.65%
R^2	0.824	0.774	0.806	0.793	0.811	0.527
N	4906	4825	5224	4789	5420	3811

Note: All specifications report, in square brackets, the p-value associated with the 6-point distribution Bootstrap procedure. Clustering is at the area of intervention level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The dependent variable in all regressions is the (inflation-adjusted) margin of station i in period t. Margins are measured in Chilean pesos per liter (CLP$). Each specification drops all observations from stations located in the specified city. Cost controls refer to the interaction between oil prices and the distance from each station to the main pipeline in the city of Santiago, to control for changes in distribution costs.

Second, I explore whether the website allowed stations to inform consumers about the services they offer. This would allow stations to further differentiate from each other, potentially increasing the margins of some stations. Importantly, I do not assume that stations change the services they offer following disclosure, but that they use the website to inform consumers of the services they already offered before the website was available. Though stations could change the services they offer following disclosure, this type of response is likely to take longer to be implemented and the data available would not allow me to identify it. For this reason, I focus on whether stations make use of the website to advertise the services they already offered before the website was implemented. The results, reported in Table C.2, show that this is not the case. In general, neither the indicator variables associated with each of the services offered nor the interaction of these indicators and the indicator for disclosure are significant.

Third, I explore whether margins could have increased because of a merger that took place in 2013. In 2013, the Chilean Supreme Court ruled against a previous decision of the Chilean *Tribunal de Defensa de la Libre Competencia* (the Chilean Competition Court) and authorized, with a number of remedies, a merger between Shell and Terpel. The ruling by the Supreme Court took place in January 2013, while the merger took place in June of the same year. I take this into account in two ways. First, I drop all observations that correspond to the merging parties for the period after the merger was approved (January 2013). Second, instead of dropping all observations that followed the approval of the merger, I drop all observations of the merging parties that followed the moment when the merger took place (June 2013). The results are reported in the first two columns of Table C.3 and show that the merger did not cause increases in prices that could be confounded with those of disclosure, which is consistent with the results reported in the last specification of Table 3.

Fourth, I examine whether the estimated effects may have been caused by (common) station ownership. The estimated coefficients associated with specifications that take ownership into account are presented in Table C.4. The first column controls for the identity of the owner or manager of a station and shows that adding this control has little impact on the coefficient of disclosure. This is due to 83 percent of the stations in the sample being owned by a single-station owner.[1] Column 2 adds municipality fixed effects and shows that these have little impact on the estimates. Column 3 replaces the owner fixed effects by an indicator showing the number of stations with which a station shares ownership. The difference between this specifi-

[1]Ownership information was provided by SEC and corresponds to the identity of the person registered in their records as being responsible for a station.

Table C.2: Effect of disclosure on margins (Robustness analysis 2: controlling for station characteristics)

	Dependent variable: margin_{it}	
	(1)	(2)
Disclosure	9.56	9.076
	[0.034]**	[0.042]**
Convenience store	3.138	3.326
	[0.322]	[0.290]
Convenience store×Disclosure	-0.688	-1.015
	[0.414]	[0.314]
Pharmacy	-6.432	-7.099
	[0.663]	[0.324]
Pharmacy×Disclosure	5.891	6.85
	[0.128]	[0.112]
Public restrooms	0.663	1.326
	[0.699]	[0.096]*
Public restrooms×Disclosure	-1.855	-2.668
	[0.146]	[0.058]*
Repair service	1.76	1.715
	[0.108]	[0.108]
Repair service×Disclosure	-1.977	-1.844
	[0.048]**	[0.062]*
Has self-service pumps	-1.882	-1.95
	[0.294]	[0.210]
Has self-service pumps×Disclosure	0.832	0.526
	[0.673]	[0.647]
Open 24 hours	2.455	2.128
	[0.881]	[0.857]
Open 24 hours×Disclosure	-1.855	-1.467
	[0.919]	[0.903]
Station FE	No	No
Brand FE	No	Yes
Brand FE×Disclosure	No	Yes
Cost controls	Yes	Yes
Region FE	Yes	Yes
Region-specific trends	Yes	Yes
Year and month FE	Yes	Yes
Mean dep. Var.	70.12	70.12
Effect as % of dep. Var.	13.63%	12.94%
R^2	0.745	0.746
N	5676	5676

Note: All specifications report, in square brackets, the p-value associated with the 6-point distribution Bootstrap procedure. Clustering is at the area of intervention level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The dependent variable in all regressions is the (inflation-adjusted) margin of station i in period t, with margins measured in Chilean pesos per liter (CLP$). Cost controls refer to the interaction between oil prices and the distance from each station to the main pipeline in the city of Santiago, to control for changes in distribution costs.

Table C.3: Effect of disclosure on margins (Robustness Analysis 3: mergers)

	Dependent variable: margin_{it}	
	(1)	(2)
Disclosure	6.392	6.607
	[0.028]**	[0.028]**
Station FE	Yes	Yes
Cost controls	Yes	Yes
Region-specific trends	Yes	Yes
Year and month FE	Yes	Yes
Merger defined on	January 2013	June 2013
Mean dependent variable	70.33	70.41
Effect as percentage of mean dependent variable	9.09%	9.38%
R^2	0.81	0.803
N	5260	5486

Note: Both specifications report, in square brackets, the p-value associated with the 6-point distribution Bootstrap procedure. Clustering is at the area-of-intervention level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. In both regressions the dependent variable is the (inflation-adjusted) margin of station i in period t, with margins measured in Chilean pesos per liter (CLP$). The first specification drops all observations following the approval of the merger for the parties involved in the transaction. The second specification drops all observations of the parties involved in the transaction following the moment when the merger took place (June 2013). Cost controls refer to the interaction between oil prices and the distance from each station to the main pipeline in the city of Santiago, to control for changes in distribution costs.

cation and the previous two is that the number of stations with common ownership is computed over the universe of stations in Chile rather than just those in the sample. Controlling for this, however, has no impact on the results. Finally, column 4 includes an interaction between the number of stations with common ownership and the disclosure indicator. Overall, the results show that margins increased by around 9 percent and that this increase was not related to station ownership.

Fifth, Table C.4 also examines whether the intervention may have reallocated demand across stations. In other words, consumers can use the website to search for prices at gas stations that were not on their commuting path before the intervention. In this case, demand for gasoline at these "less visible" stations may have increased as consumers deviated from their commuting paths to visit them. To test this hypothesis, one would need information about purchases both before and after the intervention, or on commuting paths, also before and after the intervention. These data, however, are not available.[2] For this reason, I follow an alternative approach that relies on the importance of the location of a station relative to its competitors in the same geographical area. I do this by classifying stations depending on whether they operate on a major street, as stations that operate on major streets are more visible and exposed to more traffic than stations that operate on other streets, within the same municipality. In this setting, the policy intervention could lead gas stations to sort into serving searchers or non-searchers, decreasing margins in the former case and increasing them in the latter. The results, reported in Table C.4, columns (5) and (6), show that this was not the case and margins increased across all stations, though they increased the most across stations located on major streets. Because in the example just given, stations located on major streets are more likely to serve a higher fraction of non-searchers after the intervention, this result suggests that some demand relocation may have taken place. However, because margins increased across all stations, coordination seems to have dominated in the context studied in this paper.

C.1.1 Robustness

I now consider a number of robustness checks related to the main specification reported in Table 3. These robustness specifications examine whether the results are driven by i) market-specific seasonality, ii) stations located at the extremes of the

[2]The Chilean government has performed Origin–Destination studies on a number of cities at different points in time. None of these studies, however, is useful for this application as they either focus on a single point in time without covering the areas in which the stations in the SERNAC sample are located or do not cover the same cities as this paper.

Table C.4: Effect of disclosure on margins (Robustness Analysis 4: ownership and location)

	Dependent variable: $margin_{it}$					
	(1)	(2)	(3)	(4)	(5)	(6)
Disclosure	6.809	6.068	6.251	6.238	5.299	5.082
	[0.018]**	[0.022]**	[0.016]**	[0.016]**	[0.042]**	[0.064]*
Major street×Disclosure					2.146	2.286
					[0.068]*	[0.062]*
Station FE	No	No	No	No	No	Yes
Major street FE	No	No	No	No	Yes	No
Owner FE	Yes	Yes	No	No	No	No
Municipality FE	No	Yes	Yes	Yes	Yes	No
Number of stations with the same owner	No	No	Yes	Yes	No	No
Number of stations with the same owner×Disclosure	No	No	No	Yes	No	No
Number of rivals within 3 km.	No	No	Yes	Yes	Yes	No
Number of rivals within 3 km×Disclosure	Yes	Yes	Yes	Yes	Yes	Yes
Cost controls	Yes	Yes	Yes	Yes	Yes	Yes
Region-specific trends	Yes	Yes	Yes	Yes	Yes	Yes
Year and month FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	71.85	71.85	71.85	71.85	70.12	70.35
Effect as percentage of mean dependent variable	9.48%	8.45%	8.70%	8.68%	7.56%	7.22%
R^2	0.771	0.784	0.77	0.768	0.775	0.793
N	5020	5020	5020	5020	5676	5795

Note: All specifications report, in square brackets, the p-value associated with the 6-point distribution Bootstrap procedure. Clustering is at the area of intervention level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The dependent variable in all regressions is the (inflation-adjusted) margin of station i in period t. Margins are measured in Chilean pesos per liter (CLP$). Specifications (1)–(4) study whether (common) ownership across stations affects margins. Specifications (5) and (6) study whether stations located on major streets experience different changes in margins than stations located on secondary streets. Cost controls refer to the interaction between oil prices and the distance from each station to the main pipeline in the city of Santiago, to control for changes in distribution costs.

search distribution, and iii) whether considering spatial correlation may affect inference.

I first consider whether the different locations may have experienced market-specific seasonality that could be confounded with the effects of implementing an online price-disclosure mechanism. To do this, I introduce market–month-of-year fixed effects, which capture any market-specific seasonality that could be confounded with the impact of the policy. The results, presented in Table C.5, show that this is not the case.

Table C.5: Effect of disclosure on margins (Robustness Analysis 5: market-specific seasonality)

	Inflation-adjusted margins				Residual price dispersion		
	Baseline	1 km.	3 km.	5 km.	1 km.	3 km.	5 km.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Disclosure	6.165	5.867	6.024	6.757	-0.104	0.123	0.141
	[0.054]*	[0.091]*	[0.044]**	[0.136]	[0.657]	[0.981]	[0.798]
Search requests per capita		3.074	2.585	2.147	-0.523	-0.162	-0.15
(within distance threshold)		[0.038]**	[0.058]*	[0.172]	[0.044]**	[0.050]*	[0.188]
Search requests per capita^2		-0.308	-0.252	-0.208	0.058	0.028	0.035
(within distance threshold)		[0.098]*	[0.085]*	[0.134]	[0.048]**	[0.043]**	[0.142]
Cost controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of rivals×Disclosure	No	Yes	Yes	Yes	Yes	Yes	Yes
Region-specific trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and market-month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	70.12	71.85	71.85	71.85	1.661	1.661	1.567
Effect as percentage of mean dependent variable	8.79%	8.17%	8.38%	9.40%	-6.26%	7.41%	9.00%
R^2	0.804	0.815	0.815	0.814	0.413	0.413	0.397
N	5676	5020	5020	5020	3248	3248	4975

Note: All specifications report, in square brackets, the p-value associated with clustering at the intervention level using the 6-point distribution Bootstrap procedure. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports estimates for four specifications in which the dependent variable corresponds to inflation-adjusted margins and three in which it corresponds to residual price dispersion. Measures of search intensity are standardized. In all specifications, cost controls refer to the interaction between oil prices and the distance from each station to the main pipeline in the city of Santiago, to control for changes in distribution costs.

Second, I now turn to examining whether the results are driven by stations that are located at the extremes of the search-request distribution. I do this by eliminating observations from stations in the top and bottom 1 percent of the search distribution.

Finally, to consider whether spatial correlation may play a role in inference, I estimate a number of specifications in which standard errors are computed according to Conley (1999) and show that this is not the case.

Table C.6: Effect of disclosure on margins (Robustness Analysis 6: dropping stations at the top and bottom 1 percent of the search distribution)

	Dep. var.: Inflation-adjusted margins		
Market definition	1 km.	3 km.	5 km.
	(1)	(2)	(3)
Disclosure	5.840	6.194	6.691
	[0.067]*	[0.065]*	[0.080]*
Petrobras×Disclosure	0.952	0.883	0.494
	[0.639]	[0.657]	[0.857]
Shell×Disclosure	1.647	1.717	2.108
	[0.000]***	[0.000]***	[0.000]***
Terpel×Disclosure	0.201	0.301	0.327
	[0.803]	[0.643]	[0.651]
Disclosure×Income	-2.674	-2.707	-2.399
	[0.193]	[0.259]	[0.787]
Search requests per capita	2.716	2.117	0.699
(within distance threshold)	[0.087]*	[0.093]*	[0.311]
Search requests per capita^2	-0.416	-0.347	-0.149
(within distance threshold)	[0.071]*	[0.189]	[0.312]
Station FE	Yes	Yes	Yes
Cost controls	Yes	Yes	Yes
Region-specific trends	Yes	Yes	Yes
Year and month FE	Yes	Yes	Yes
Demographic controls×Disclosure	Yes	Yes	Yes
Number of rivals within distance threshold×Disclosure	Yes	Yes	Yes
Mean dependent variable	72.15	72.09	71.85
Effect as percentage of mean dependent variable	6.98%	8.51%	9.31%
R^2	0.785	0.784	0.792
N	4644	4675	4641

Note: All specifications report, in square brackets, the p-value associated with clustering at the intervention level using the 6-point distribution Bootstrap procedure. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The dependent variable in all regressions corresponds to inflation-adjusted margins. The regressions exclude the lower and upper 1 percent of observations in the distribution of search requests. In all specifications, cost controls refer to the interaction between oil prices and the distance from each station to the main pipeline in the city of Santiago, to control for changes in distribution costs.

Table C.7: Effect of disclosure on margins (Robustness Analysis 7: standard errors as in Conley 1999)

	Inflation-adjusted margins			Residual price dispersion	
	Baseline	1 km.	3 km.	1 km.	3 km.
	(1)	(2)	(3)	(4)	(5)
Disclosure	6.484	6.394	5.757	0.821	0.809
	[0.034]**	[0.070]*	[0.068]*	[0.038]**	[0.167]
Search requests per capita		4.865	4.238	-0.611	-0.260
(within distance threshold)		[0.071]*	[0.105]	[0.001]***	[0.084]*
Search requests per capita^2		-0.501	-0.433	0.051	0.024
(within distance threshold)		[0.052]*	[0.087]*	[0.022]**	[0.022]**
Station FE	Yes	Yes	Yes	Yes	Yes
Cost controls	Yes	Yes	Yes	Yes	Yes
Number of rivals within distance threshold×Disclosure	No	Yes	Yes	Yes	Yes
Region-specific trends	Yes	Yes	Yes	Yes	Yes
Year and month FE	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	70.33	71.85	71.85	1.661	1.528
R^2	0.810	0.788	0.788	0.2243	0.252
N	5260	5020	5020	3248	4776

Note: The table reports estimates for three specifications in which the dependent variable corresponds to inflation-adjusted margins and two in which it corresponds to residual price dispersion. p-values are based on standard errors computed following Conley (1999), with a distance threshold of 100 kilometers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Measures of search intensity are standardized. In all specifications, cost controls refer to the interaction between oil prices and the distance from each station to the main pipeline in the city of Santiago, to control for changes in distribution costs.

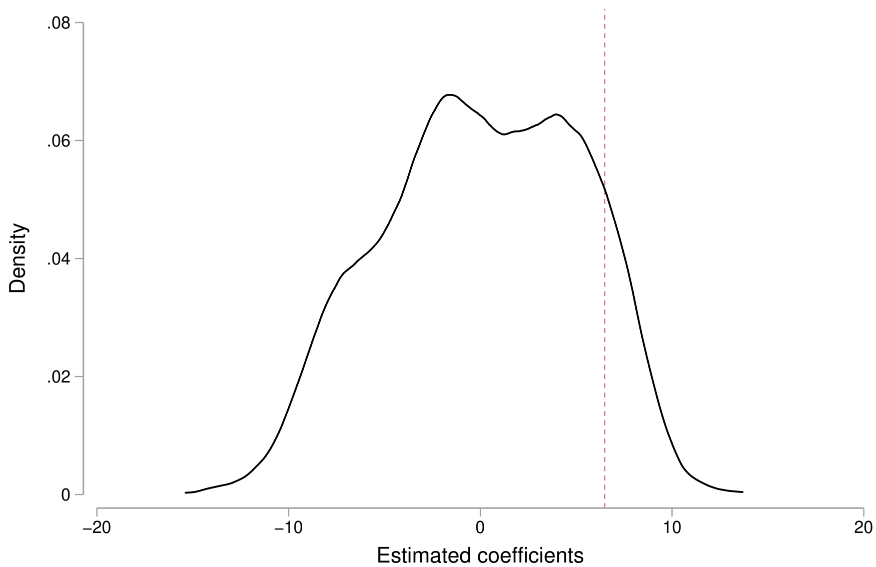
C.2 Placebos

To examine to what extent the estimated effects could have happen by chance, I perform two placebo exercises. In both exercises, the moment at which treatment starts in each intervention area is randomly drawn from the sample period. An area is considered treated for all periods following the moment at which it was assigned treatment. The difference between the two exercises is that in the first one I do not consider the order in which the intervention actually took place, while in the second one I do. This is, while in the first exercise the moment of treatment is drawn independently for each intervention area, in the second exercise the order of intervention is the same as in the data but the moment at which the intervention starts is drawn randomly. This means that in the first exercise the resulting rollout sequence differs from the real rollout sequence in both the moment when interventions take place and also in the order in which regions are treated. The rollout sequence in the second case, however, only differs from the real rollout sequence in the moment at which the intervention starts.

It is important to note that because all areas of intervention are treated in the data, and the placebos only consider randomly assigning the moment at which treatment starts, the resulting treatment periods consider months during which the different areas where actually treated. In other words, if an area of intervention is randomly assigned treatment before the moment in which it was actually treated, the resulting placebo considers as treated both months in which the area was not treated (e.g., the months between the randomly-drawn initial treatment period and the month before when that area was actually treated) and months in which it was (e.g., the months during which that area was actually treated). Similarly, if an area is assigned treatment after it was actually treated, the resulting placebo considers as treated a subset of the months in which the area was actually treated.

I perform both placebo exercises 10,000 times and recover the distribution of the estimated effects. I use these distributions to compute the p-value associated with the estimated effect reported in Table 3. Figure C.1 reports both the distribution of the estimated placebo effects and the effect reported in Table 3. The figure shows that the distribution is centered at zero and that the estimated effect is at the top of the distribution, with an associated p-value of 0.0916, which suggest that there is a low probability that the effect was estimated by chance. I do not report the distribution associated with the second placebo exercise because imposing the same order of treatment across areas as in the data, results in only 48 possible placebos as the month in which the first area of intervention is treated defines the placebo exercise. Nonetheless, the p-value of the estimated effect in this case is 0.0652, which also suggests that the effects have a low probability of being estimated by chance.

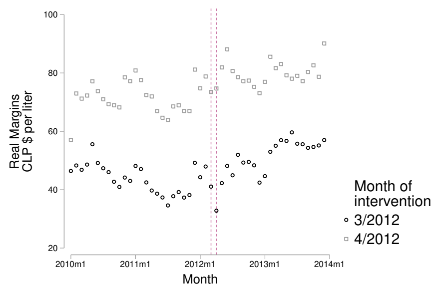
Figure C.1: Distribution of placebo estimates



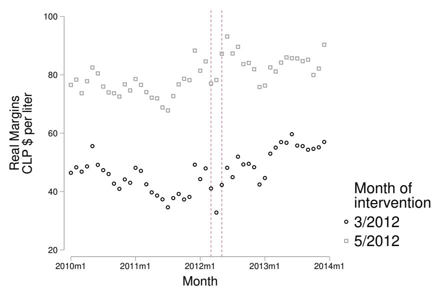
The figure reports the distribution of the placebo estimate, based on 10,000 repetitions, where the moment at which treatment starts in each intervention area is randomly drawn from the sample period. The vertical line corresponds to the estimated value of 6.48, with a p-value of 0.0916.

D Figures

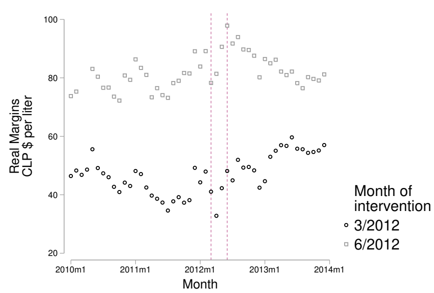
Figure D.1: Mean margins by area of intervention



(a) Areas 1 and 2



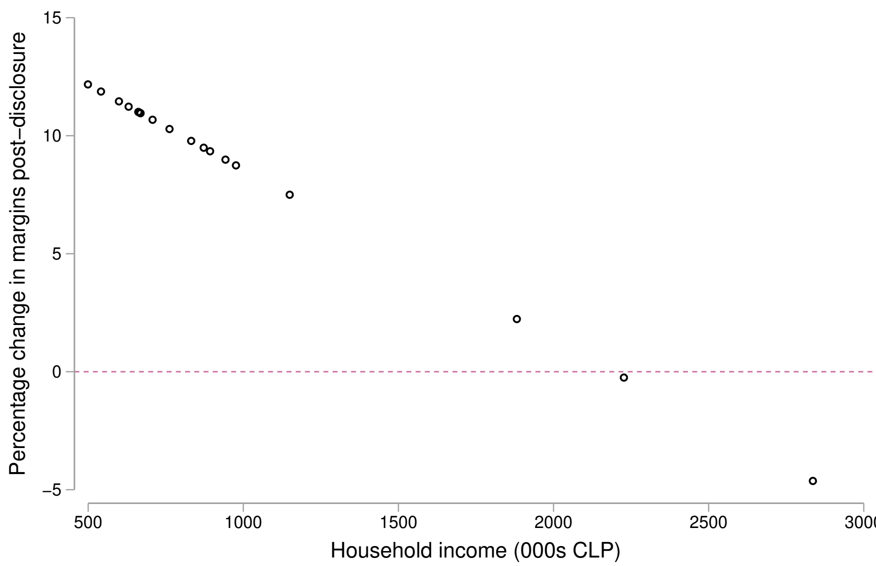
(b) Areas 1 and 3



(c) Areas 1 and 4

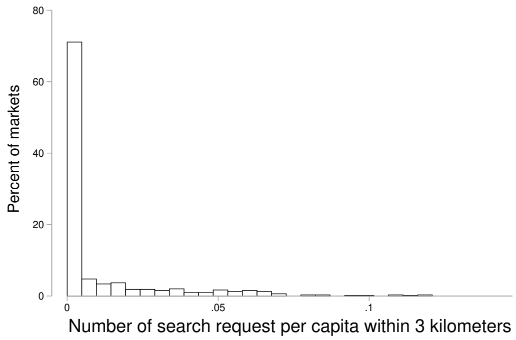
The figure presents the evolution of mean margins across areas of intervention. The vertical red lines denote the moment the website became operative in the areas of intervention presented in the figure.

Figure D.2: Estimated percentage change in margins by household income level

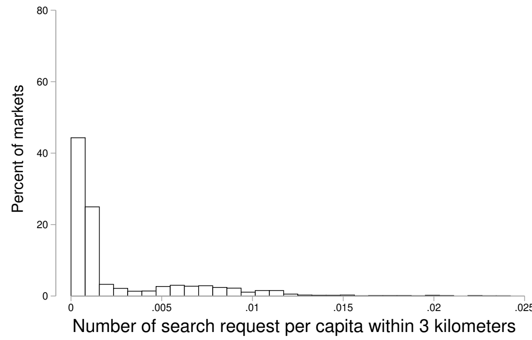


The figure reports the estimated percentage changes in margins over the range of household income observed in the data. In the figure, household income is measured in thousands of Chilean pesos per month. In the data, monthly household income ranges between 430,000 and 2,837,000 Chilean pesos per month. At the average exchange rate between US dollars and Chilean pesos of 2012, monthly household income in US dollars ranged between $886 and $5,826. The underlying regressions correspond to Column (4) in Table 4.

Figure D.3: Distribution of search intensity across markets



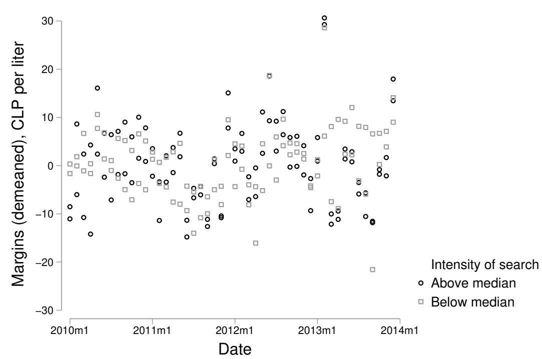
(a) 2012



(b) 2013

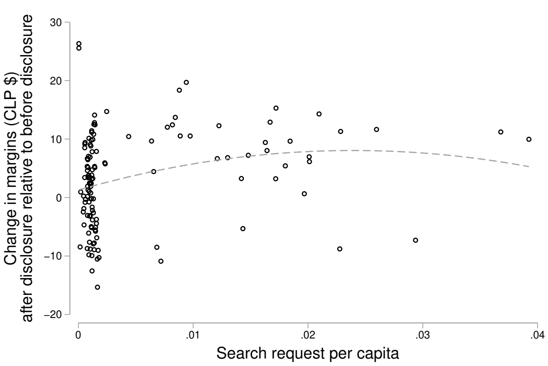
The figures report the distribution of search intensity in the neighborhood of gas stations for 2012 and 2013.

Figure D.4: Margins and ex-post search intensity



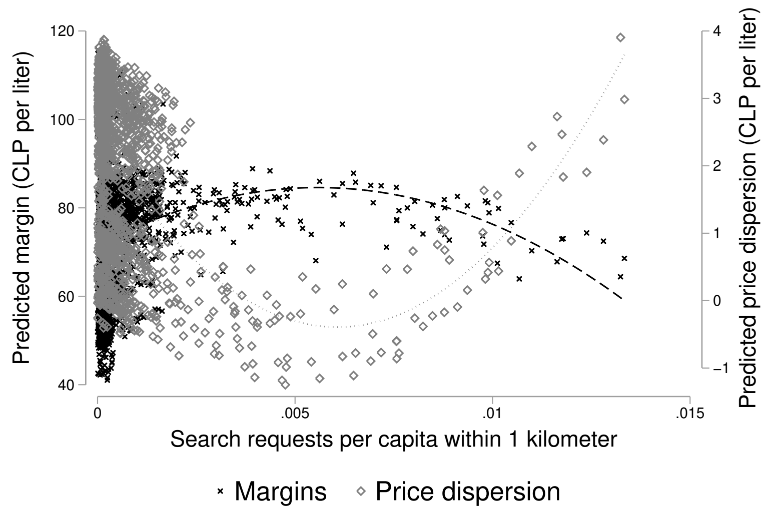
The figure reports the evolution of margins classifying stations by the intensity of search during the post-disclosure period.

Figure D.5: Margins and ex-post search intensity

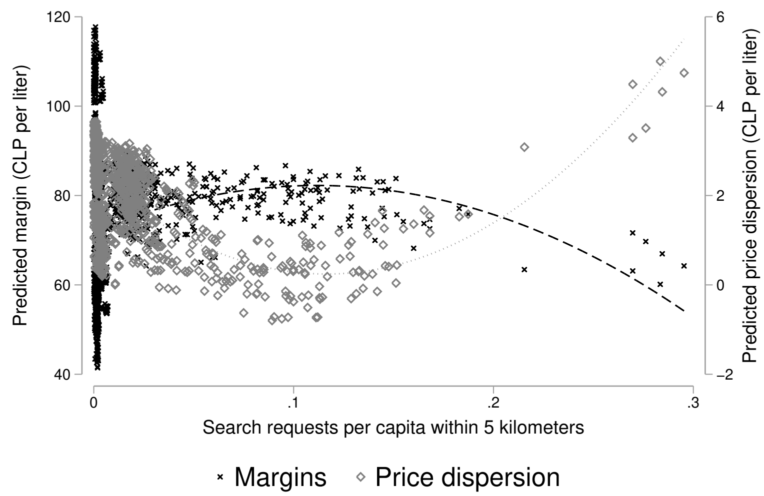


The figure reports changes in margins after disclosure relative to before disclosure, at the station level, as a function of average search intensity in the neighborhood of each station during the post-disclosure period. In the figure, markets are defined using a 3-kilometer radius around gas stations. The figures are similar using both a 1- and 5-kilometer radius.

FIGURE D.6: Predicted margins and price dispersion by market definition



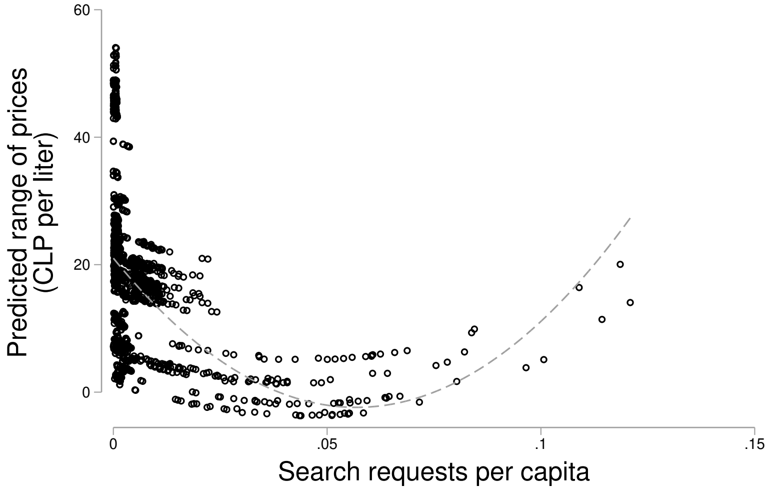
(a) 1 kilometer



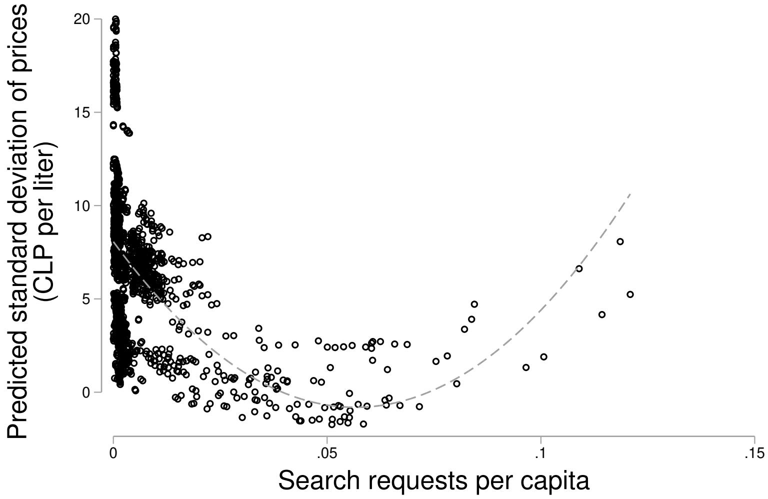
(b) 5 kilometers

Figure D.6a reports predicted margins and (cleaned) price dispersion for markets defined using a 1-kilometer radius around gas stations. Figure D.6b present the same predicted outcomes using markets defined using a 5-kilometer radius. The underlying regressions for the predicted margins are columns (2) and (6) of Table 5. The underlying regressions for predicted price dispersion correspond to those in Table 6.

FIGURE D.7: Predicted range and standard deviation of prices as a function of local search intensity



(a) Range of prices



(b) Standard deviation of prices

The upper panel plots the predicted range of prices for markets defined using a 3-kilometer radius around gas stations. The lower panel repeats the analysis using the predicted standard deviation of prices for the same market definition. The figures are similar for markets defined using a 1- and 5-kilometer radius around gas stations. The underlying regressions for predicted price dispersion correspond to those in Table 6.

References

Conley, Timothy G. 1999. "GMM estimation with cross sectional dependence." *Journal of Econometrics*, 92(1): 1–45.

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