American Economic Review 100 (June 2010): 1269–1276
http://www.aeaweb.org/articles.php?doi=10.1257/aer.100.3.1269

Vertical Relationships and Competition in Retail Gasoline Markets: Empirical Evidence from Contract Changes in Southern California: Comment

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In a paper in the March 2004 issue of the *American Economic Review*, Justine S. Hastings studies the acquisition of a sizable independent gasoline retailer, Thrifty Oil Company (Thrifty), by a vertically integrated refiner/retailer, ARCO. She employs a difference-in-differences approach on a panel of station-specific prices to examine the price effects of this transaction at nearby competing stations. She finds that the pure rebranding effect of the transaction increased retail gasoline prices by five cents per gallon at competing stations. This effect is identified separately from changes in horizontal concentration and differences in the degree of vertical control, for which no effect on prices was found.

The size of the estimated price effect—five cents per gallon amounts to a 50 percent increase in retail margins—along with a desire to better understand the mechanism behind it, motivated us to revisit Hastings's analysis.[1] Being unable to acquire her data, we used an alternative source, which in aggregate is very similar to the original dataset. While there are differences between the two datasets, the five-cent effect is large enough that we would expect to find an effect of a similar order of magnitude. Ultimately, however, we find an effect of tenths of a cent per gallon, which is of little economic significance. This finding is robust to using various subsamples and analysis of higher-frequency data, unavailable in the Hastings data.[2] Our empirical results cast doubt on whether ARCO's acquisition of Thrifty led to higher prices.[3]

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[1] The average price of regular grade gasoline, without tax, to end users in California in 1997 was 86 cents per gallon. The average wholesale price of regular gasoline in California in 1977 was 76 cents per gallon (Department of Energy, Energy Information Service, gasoline prices by formulation, grade, and sales type; available at http://tonto.eia.doe.gov/dnav/pet/pet_pri_allmg_c_SCA_EPMR_cpgal_a.htm). Hastings's estimated price effect measured as a percentage of the combined refining, wholesale, and retail margin of gasoline is sizable as well, since the average price of crude in California in 1997 was 38 cents per gallon (Department of Energy, Energy Information Service, California Crude Oil First Purchase Price; available at http://tonto.eia.doe.gov/dnav/pet/hist/f005006__3a.htm).

[2] In addition to the specifications described herein, see Christopher T. Taylor, Nicholas M. Kreisle, and Paul R. Zimmerman (2007).

[3] Our results also cast doubt on the underlying model of consumer preferences (differentiated products with consumer brand loyalty) for which Hastings finds support in her data. Even if this model accurately depicts consumer behavior, we note that its welfare effects are ambiguous because the introduction of a new brand increases gross consumer utility. Hastings describes how rebranding can soften price competition but makes no claims as to welfare effects.

I. The ARCO-Thrifty Transaction

Hastings examines the price effect of ARCO's 1997 long-term lease of 265 retail sites from Thrifty and the subsequent rebranding to ARCO. The Thrifty stations were located primarily in San Diego and Los Angeles. This transaction marked the exit of the largest independent/unbranded chain of gasoline stations in Southern California. Hastings discusses the details of the transaction. However, we add two pieces of context: this transaction was part of a trend in California, and the firms had a prior vertical relationship at the time of the transaction.[4]

In 1996 the introduction of CARB Phase II gasoline led to the exit of several small refineries, which supplied the unbranded wholesale market, and an output reduction from the California refineries that remained.[5] The tighter supply of gasoline in California resulted in periodic pricing inversions, i.e., unbranded prices above branded prices.[6] During periods of 1996, ARCO, which was typically the lowest priced "major" brand, was setting retail prices below those of some independent rivals. To avoid such undercutting, World Oil, a sizable independent retailer in Southern California, reached a supply and rebranding agreement with Exxon around the time of the ARCO-Thrifty transaction.

Prior to the announcement of the ARCO-Thrifty transaction in March 1997, Thrifty was one of ARCO's largest dealers, as 44 of the acquired stations already carried the ARCO brand.[7] In January 1997 a press report stated that ARCO signed an agreement to supply unbranded gasoline to 110 of Thrifty's stations. In total, over 15 percent of the stations ARCO leased were already branded ARCO, and half of the stations were being supplied by ARCO. Therefore, the acquired stations were not equally affected by the change in branding and/or vertical market structure.

II. Analysis

A. *Datasets*

Hastings uses data from the Whitney Leigh Corporation (W-L)—a census of station locations in Southern California that includes prices on a 20 percent sample of the stations. Of the 669 sampled stations 99 are within a mile of a rebranded Thrifty. Hastings describes the prices as "the prices posted at the end of the volume collection period for the months of February, June, October, and December in 1997" (p. 321). In other words, there are four data points for each station, two before and two after the transaction.

Being unable to acquire Hastings's data, we examine a panel of station-specific retail prices for gasoline outlets in Los Angeles and San Diego from February 1996 through December 1998

[4] This description of the gasoline market in California in 1996–1997 is drawn from *Platt's Oilgram News,* November 4 and 26, 1996, and January 13 and March 5, 1997 and *21st Century Fuels*, April 1 and May 1, 1997.

[5] The California Air Resources Board (CARB) adopted standards for cleaner-burning gasoline in 1990–1992; Phase II began in 1996. According to the Energy Information Administration, in 1991 there were 32 refineries with a capacity of 2.2 million barrels per day (bpd) in California. By 1995, only 25 refineries remained, with a capacity of 1.9 million bpd. Sources: http://www.arb.ca.gov/html/brochure/history.htm and http://tonto.eia.doe.gov/dnav/pet/pet_pnp_cap1_dcu_SCA_a.htm.

[6] During inversions, our understanding is that unbranded stations may not simply purchase branded gasoline, contrary to footnote 7 of Hastings (2004). For a discussion of this issue see Office of the Attorney General, State of Arizona, 2005 Gasoline Report, available at http://www.azag.gov/consumer/gasoline/PublicGasReport2005.pdf.

[7] An issue we would have liked to examine was whether price increased at stations surrounding the pretransaction ARCO-branded Thrifty locations. This would have allowed us to estimate the effect of branding separately from the effect of vertical control (note that this differs from the variation in vertical contract that Hastings was able to study). Since we could not find a sizable robust price effect, this became a moot point.

TABLE 1—COMPARISON OF BRAND SHARES ACROSS ALTERNATIVE SAMPLES, 1997

Brand	CA Energy Comm. (LA) (1)	CA Energy Comm. (SD) (2)	Whitney Leigh (LA) (3)	Whitney Leigh (SD) (4)	OPIS (LA) (5)	OPIS (SD) (6)	Hastings (2004) brand type (7)
Alliance	0.04						
American Gas	0.35						
ARCO	11.41	11.16	19.41	13.21			
Chevron	12.23	10.34	17.84	17.61	0.39	0.27	High
Circle K	0.13	3.13					
Citgo	0.30	8.70			0.82	23.51	Low
Exxon	0.13					1.97	Mid
Fastrip	0.04						
Mobil	13.75	8.44	15.88	13.21	45.96	21.46	Mid
Olympic	0.04						
Shell	14.05	12.38	14.12	17.61	39.80	28.84	High
Sinclair					0.41		Low
Texaco	5.03	10.34	8.43	12.58	12.64	23.23	Mid
Thrifty	4.34	4.76					
Ultramar	0.30	1.50					Low
Unbranded	19.43	19.73					
United Oil	1.65						
Unocal	15.13	8.71	12.55	11.95		0.39	High
USA	0.78	0.54					
World Oil	0.87	0.27					
Minor brands			5.25	8.18			
Independents			6.52	5.66			
Total stations	2,354	806	510	159	744	257	

Notes: Brand shares are expressed in percents. Brand shares reported in columns (3)–(4) are from Hastings (2004) Table 1. Brand shares may not sum to 100 percent due to rounding.

from the Oil Price Information Service (OPIS).[8] Most of our results rely on the 1997 data. OPIS collects the data from fleet card transactions.[9] We use the average monthly price charged at a given outlet for a gallon of regular unleaded gasoline.[10] We also obtained a December 1996 census of gasoline station locations from the California Energy Commission (CEC).

It is important to examine the differences between the OPIS and the W-L data. Table 1 compares the distribution of brands in the OPIS and W-L datasets against the CEC census. Both the OPIS and W-L data undersample minor brands and independents.[11] However, the overall distribution of brands in the W-L data is closer to a random sample as measured by the CEC census. Although the OPIS dataset contains more stations, it omits some major brands (ARCO, Chevron,

[8] Hastings did not provide access to the W-L data for copyright reasons. We were not able to purchase the data since the Whitney Leigh Corporation is now defunct. Hastings provided a list of the 91 stations found in both the W-L and OPIS data. Our results are unchanged if we restrict analysis to the overlap stations.

[9] A fleet card is a type of credit card a company issues to its employees (salesmen, insurance claims adjusters, etc.) to pay for gasoline and possibly repairs. Fleet cards are used to monitor what items employees charge to the firm. OPIS receives a price per gallon, not the total purchase in dollars and the number of gallons purchased.

[10] The OPIS data are collected on a daily basis. However, we used station-specific monthly averages since a given station does not necessarily have a price observation each day.

[11] In addition to the "unbranded" category, we considered the following brands in the CEC census to be either "minor brands" or "independents": Alliance, American Gas, Circle K, Citgo, Fastrip, Olympic, Thrifty, Ultramar, United Oil, USA, and World Oil.

and Unocal) as well as some minor brands.[12] The decision to accept fleet cards is made by brand, not by station. Neither the OPIS nor the W-L dataset captures price information at rebranded Thrifty stations before or after the transaction.

To summarize, both the W-L and OPIS datasets provide retail price information at the station level. While the W-L dataset is a more representative sample, the OPIS data are available at a greater frequency, for a larger number of stations, and for a longer time period.

The ultimate question is whether the distribution of brands in the OPIS data biases our results. We can make a conjecture based on Hastings's Table 3, which documents the effects of the ARCO-Thrifty transaction by "high-share," "mid-share," and "low-share" brands.[13] (The effect on ARCO's premerger stations is estimated separately.) Column 7 of our Table 1 displays the Hastings classification for each brand. Hastings posits that market share is positively correlated with the degree of brand loyalty. Consequently, independents compete most closely with low-share brands, so that the ARCO-Thrifty transaction should increase prices the most at low-share branded stations. Indeed, using the W-L data, Hastings finds that prices increased at low-share, mid-share, and high-share brands by approximately \$0.07, \$0.05, and \$0.03 per gallon, respectively. Consistent with its low-price strategy, the estimated effect on ARCO resembles that of the low-share group.

Based on the OPIS data oversampling of high- and mid-share brands at the expense of low-share brands and ARCO, we expect our estimate of the transaction's effect on all stations to be lower than that estimated by Hastings. However, this difference should be small, since the effect on high- and mid-share brands was \$0.03 and \$0.05.

B. *Econometric Analysis*

In this section we consider several empirical specifications based upon the econometric research design employed by Hastings. Specifically, we adopt Hastings's fixed-effects or difference-in-differences approach to identifying the impact of Thrifty conversions on market prices, both in the aggregate and by individual brand, as well as for both the pooled and individual OPIS city samples.

Table 2 presents the results of estimating the following regression:

$$(1) \qquad p_{i,t} = \mu + \alpha_i + \beta Conversion_{i,t} + \sum_{j=1}^{N} \sum_{k=1}^{T-1} \delta^{jk} \gamma_i^j \tau_t^k + \varepsilon_{i,t},$$

where $p_{i,t}$ denotes the average price charged by the ith station during the last week of the tth time period. The dummy variable $Conversion_{i,t}$ takes a value of one if station i is located within a mile of a Thrifty station during period t (i.e., "competed" with an independent Thrifty outlet prior to its conversion, February and June).[14] Thus, a negative estimate of the coefficient β implies that the transaction (the loss of an independent competitor) is correlated with an increase in the average price at these competing stations. The city-time fixed effects are captured by the interaction of city dummies, γ_i^j, and time dummies, τ_t^k. For the individual city regressions the city-time

[12] Some brands (ordinarily) disallow OPIS from reporting their fleet card purchases. Some brands simply do not accept fleet cards (e.g., ARCO).

[13] There was one exception to the relationship between market share and assigning firms to a brand category as described in footnote 25 of Hastings. Mobil had a large market share but was assigned to the middle category because its price response was similar to that of Texaco, a mid-share brand.

[14] In these estimations we use actual driving distance as in Hastings. In previous versions of the paper we used a one-mile straight-line radius and found similar results (see Taylor, Kreisle, and Zimmerman 2007). With both distance measures, we did robustness checks using 0.5 or 1.5 miles as the cutoff as well.

TABLE 2—ESTIMATED EFFECT OF THRIFTY STATION CONVERSIONS ON THE MARKET PRICE FOR RETAIL REGULAR-GRADE GASOLINE, 1997

Variable	Los Angeles sample	San Diego sample	Pooled sample	Hastings (2004) pooled sample
Conversion	−0.002	−0.001**	−0.004**	−0.050**
	(0.002)	(2.79)	(2.00)	(4.95)
LA × February	−0.092**		−0.091**	0.018**
	(62.15)		(62.72)	(2.77)
LA × June	0.010**		0.011**	0.0243**
	(7.93)		(8.33)	(3.74)
LA × October	0.127**		0.127**	0.139**
	(96.83)		(96.78)	(21.72)
SD × February		−0.124**	−0.126**	−0.085**
		(51.15)	(52.74)	(23.61)
SD × June		−0.046**	−0.048**	−0.030**
		(22.19)	(24.08)	(8.44)
SD × October		0.045**	0.045**	0.055**
		(24.23)	(24.22)	(15.14)
Constant	1.324**	1.455**	1.358**	1.362**
	(1,272.28)	(962.16)	(1,568.25)	(47.45)
N	2,942	1,016	3,958	2,676
R^2	0.76	0.64	0.44	0.72
F-statistic (H_O: All slopes = 0)	8,043.88**	1,390.09**	5,678.36**	Not reported

Notes: The dependent variable is the average monthly retail price for regular unleaded gasoline by station for February, June, October, and December of 1997. Absolute values of robust *t*-statistics appear in parentheses. All models include full sets of station-specific dummies.

** Significantly different from 0 at the 1 percent level.

* Significantly different from 0 at the 5 percent level.

effects are simply time effects. The variables μ, α_i, and $\varepsilon_{i,t}$ represent the constant term, the station-specific fixed effect and the error term, respectively. The results shown in Table 2 are estimated using the average monthly price by station for the four monthly time periods (February, June, October, December) in 1997 to match the time periods in the W-L data.

The model above is identical to that of Hastings except for the fact that Hastings includes a dummy variable indicating whether ARCO operated the station after the rebranding. We lack this information. But Hastings finds that the point estimate of the coefficient on this variable is less than $0.01 per gallon and is statistically insignificant. [15]

Table 2 presents our results separately for the pooled, Los Angeles, and San Diego OPIS samples, as well as Hastings's results for the pooled sample. The estimated standard errors are obtained using the Huber-White estimator. The coefficient estimates for the individual city-month interactions are economically relevant, ranging from $0.02 to $0.13 per gallon. These estimates closely resemble the Hastings findings using the W-L data.

By contrast, the coefficient estimates pertaining to the $Conversion_{i,t}$ variable in our Table 2 differ substantially from those of Hastings. Her results for the pooled W-L sample show that the loss of Thrifty as a competitor is associated with a $0.05 per gallon price increase. For the OPIS pooled sample, our coefficient estimate of $Conversion_{i,t}$ has the same sign as that of Hastings (i.e., negative); however, it is just four-tenths of a cent per gallon. For the Los Angeles sample, the

[15] A second, technical difference is that Hastings considers whether each station competes with *any* independent. However, her footnote 18 states that the only source of variation in this variable comes from the Thrifty conversion. The station fixed effect captures competition from non-Thrifty independents, with no effect on our results.

TABLE 3—ESTIMATED IMPACT OF THRIFTY-TO-ARCO STATION CONVERSIONS ON MONTHLY RETAIL GASOLINE PRICES

	Los Angeles sample			San Diego sample			Pooled sample		
	Price (1997)	Price (1996–1998)	Price excluding stations with reporting errors (1996–1998)	Price (1997)	Price (1996–1998)	Price excluding stations with reporting errors (1996–1998)	Price (1997)	Price (1996–1998)	Price excluding stations with reporting errors (1996–1998)
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Conversion	−0.004**	−0.005**	−0.006**	−0.006**	−0.01**	−0.01**	−0.005**	−0.006**	−0.007**
	(3.06)	(4.89)	(5.64)	(3.29)	(6.80)	(6.15)	(4.20)	(7.38)	(7.64)
Constant	1.323**	1.181**	1.180**	1.455**	1.259**	1.240**	1.357**	1.209**	1.204**
	(1,118.65)	(909.44)	(904.29)	(892.28)	(658.47)	(571.81)	(1,393.19)	(1,111.95)	(1,054.99)
N	8,848	24,977	23,545	3,054	8,702	6,975	11,902	33,679	30,520
R^2	0.76	0.88	0.88	0.63	0.83	0.83	0.41	0.76	0.78
$F(H_0$: all slopes = 0)	7,959.58**	12,111.63**	15,356.94**	1,939.67**	4,394.28**	3,449.05**	5,155.17**	8,370.6**	7,474.14**

Notes: The dependent variable is the OPIS average monthly retail price (measured in dollars per gallon) for regular gasoline by station. All models are estimated by OLS. Absolute values of robust *t*-statistics appear in parentheses. All models include month-year (or city × month-year) dummies (estimates not shown). The regression results reported in columns labeled with (3) exclude stations where the price of premium or mid-grade gasoline appears to have been reported.

** Significantly different from 0 at the 1 percent level.

* Significantly different from 0 at the 5 percent level.

point estimate of the coefficient on $Conversion_{i,t}$ is again negative, but only \$0.002 per gallon and not statistically significant. For the San Diego sample, the point estimate is negative, \$0.001 per gallon and statistically significant at the 1 percent level. Each of these estimates is an order of magnitude smaller than the effects seen in Hastings's Los Angeles and San Diego graphs of \$0.04 to \$0.06 per gallon (see her Figure 1).

As mentioned earlier, the OPIS data are more frequent and available for a longer time period than the W-L data. Table 3 presents the results of estimating equation (1) when we exploit these benefits of the OPIS data. As before, we employ a "two-way" fixed-effects specification, controlling for both station-level and city-time (month or month-year, as appropriate) fixed effects. We estimated this equation separately for the Los Angeles, San Diego, and pooled samples. We assumed the date of conversion was July 1, 1997.[16] In Table 3, the first column for each sample is estimated using the 12 months of data in 1997. The second column for each sample is estimated using three years of monthly data, 1996-1998. Column 3 in each sample examines the robustness of the results with respect to the treatment of stations where OPIS apparently misclassified premium and/or mid-grade gasoline prices as regular grade by dropping any station where prices appear to have been misclassified—altogether, roughly 11 percent of the observations in the pooled sample.[17]

In these specifications, the estimated coefficients on $Conversion_{i,t}$ have the expected sign (negative, indicating a price increase) but again are small, no bigger than \$0.01 per gallon. To

[16] The news reports cited earlier state that all conversions were to be completed by that date. As a robustness check, we estimated the results with conversion occurring on June 1 and August 1, 1997, as well. There was no appreciable change in the results for these changes in the assumed conversion date.

[17] In an alternative attempt to correct for this apparent misclassification, we used weekly minimum prices; see Taylor, Kreisle, and Zimmerman (2007). In Table 2, we have also dropped these stations with no substantial effect on the results.

TABLE 4—ESTIMATED IMPACT OF THRIFTY-TO-ARCO STATION CONVERSIONS ON MONTHLY RETAIL GASOLINE PRICES BY INDIVIDUAL BRAND

	Los Angeles sample		San Diego sample		Pooled sample	
Brand regression:	(1997)	(1996–1998)	(1997)	(1996–1998)	(1997)	(1996–1998)
Shell	−0.0025	−0.0034**	−0.0127**	−0.0187**	−0.0048**	−0.0069**
	(1.37)	(2.61)	(5.82)	(8.79)	(3.25)	(6.16)
N	3,543	9,953	880	2,488	4,423	12,441
Mobil	−0.0031**	−0.0024**	−0.019**	−0.0083**	−0.0048**	−0.003**
	(2.19)	(2.24)	(4.09)	(2.34)	(3.51)	(2.95)
N	4,055	11,586	657	1,879	4,712	13,465
Exxon	.	.	−0.0050	−0.0156	−0.0050	−0.0156*
	.	.	(0.55)	(1.91)	(0.55)	(1.80)
N	.	.	60	170	70	191
Texaco	−0.0094	−0.0206**	−0.0199**	−0.0143**	−0.0126**	−0.0186**
	(1.45)	(3.68)	(4.39)	(3.89)	(2.67)	(4.69)
N	1,111	3,048	715	2,030	1,826	5,078
Citgo	.	.	0.0084**	0.0020	0.0084**	0.0020
	.	.	(2.40)	(0.82)	(2.38)	(0.81)
N	.	.	718	2,074	787	2,269
Sinclair	−0.0062	−0.0026	.	.	−0.0062	−0.0026
	(0.61)	(0.36)	.	.	(0.61)	(0.36)
N	36	105	.	.	36	105

Notes: This table presents estimates pertaining to individual regressions of brand-specific OPIS average monthly regular prices (dollars per gallon). Thus, rows/brands correspond to separate regressions. All models are estimated by OLS. All models include a constant term and month-year (or city × month-year) dummies (estimates not shown). Absolute values of robust *t*-statistics appear in parentheses. A "." indicates that the model could not be estimated.

** Significantly different from 0 at the 1 percent level.

* Significantly different from 0 at the 5 percent level.

the extent that the ARCO-Thrifty transaction had *any* upward impact on retail gasoline prices, these results suggest that the effect was far smaller than what Hastings found using the W-L data.

Hastings also disaggregates the effect by high-, mid-, and low-share brands to test her theory of product differentiation with brand loyalty. While these results are generally consistent with her theory—the magnitudes increase from high- to mid- and then low-share brands—the *across*-group differences are rather small. The coefficient estimate on the mid-share variable is not statistically different from the low-share variable. The coefficient estimate on the high-share variable is statistically different from the mid-share variable at the 10 percent level. These results would have been even weaker had Mobil been placed in the high brand group, which would have been consistent with its market share reported in Hastings's footnote 25.

We also looked at brand level differences. Table 4 presents the results of estimating equation (1) by brand (i.e., where the dependent variable is the average monthly price charged by each station) for each of the brands for which sufficient price observations are available. These regressions use data for all months in 1997, and separately for all months in the 1996–1998 period, controlling for both station and city-time fixed effects. We present *t*-statistics using Huber-White robust standard errors. The table orders the brands according to the Hastings classification as high- (Shell), mid- (Mobil, Exxon, and Texaco), or low-share (Citgo and Sinclair) brands.

The pooled sample in our Table 4 affords the most direct comparison with Hastings's Table 3. That the level of the estimated effect is much smaller in our table is unsurprising. However, the

pattern across brands apparent in Hastings's table is not present in ours. Based on her results using the W-L data, and consistent with her theory of brand loyalty, the magnitude of the coefficient estimates should increase as we move down the table from a high-share to mid- and then low-share brands. However, this pattern does not emerge in our table, for either the pooled sample or the city subsamples. In fact, the estimate pertaining to Citgo, a low-share brand, directly conflicts with Hastings's theory as it implies that the ARCO-Thrifty transaction lowered prices by as much as $0.008 per gallon at a competitor that should have been "close" to Thrifty in product space. Hastings's theoretical hypothesis and empirical results using the W-L data suggest that this type of firm should experience the largest price increase upon the rebranding of an independent competitor.[18]

III. Conclusions

Hastings's analysis of the W-L data indicates that the ARCO-Thrifty acquisition increased prices at nearby competing stations by $0.05 per gallon, on average. Our analysis of the OPIS data provides a very different estimated price effect of this transaction, suggesting that if there was any price effect, it was an order of magnitude smaller. While we used a different dataset, we have found no reason that would explain this discrepancy.

Merger retrospectives are very useful. They not only inform antitrust policy but also increase our understanding of consumer behavior and competitive forces. Hastings's research design provides an excellent example of the methodology to use and the type of event that needs to be studied. Unfortunately, demand for merger retrospectives continues to exceed supply.[19]

In addition, this paper reinforces the point, made by Daniel S. Hamermesh (2007), that additional attempts to replicate and reproduce empirical results in published papers would be beneficial. More scientific replication will increase the credibility of empirical economic research and might increase its use by policymakers.

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[18] Hastings shared W-L station attribute data with us demonstrating that Citgo stations have fewer fueling positions than other minor brand or unbranded stations—on average about half as many pumps. It is unclear why having fewer pumps would immunize Citgo from the effects of the ARCO-Thrifty transaction. Despite the relatively low number of pumps per station, Citgo has a relatively large share of the stations in San Diego among all minor brands (see the CEC data in Table 1).

[19] For a literature review of merger retrospectives, see Paul A. Pautler (2003). The bulk of the published merger retrospectives are in the banking and airline industries. Merger retrospectives in the petroleum industry include Hastings and Richard J. Gilbert (2005), Taylor and Daniel S. Hosken (2007), and John D. Simpson and Taylor (2008).

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