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ABSTRACT

In May 2007 the Federal Trade Commission failed to win a preliminary injunction in U.S. District Court that would have blocked the merger of two refiners that served Albuquerque, NM and surrounding areas. This study compares estimates of the post merger price effect to the price effects predicted by economic experts on both sides of the case. I find little scope to interpret the evidence as consistent with an anticompetitive post merger price effect. I also highlight difficulties involved in econometrically identifying small effects even with an abundance of pricing data.

* I would like to thank Lou Silvia, Chris Taylor, Matthew Chesnes, and Dan Hosker for their comments, and Dan Greenfield for assistance in compiling Table 1. The views expressed are those of the author and do not necessarily represent those of the U.S. Federal Trade Commission or any individual Commissioner.

2. The Competitive Overlap

The ability of the Western/Giant transaction to affect competition lies in Albuquerque's relative isolation with regard to petroleum product supply, as summarized in Figure 1.¹ Sitting at or near the end of three pipelines, only five refiners had direct access to Albuquerque. Giant delivered product to Albuquerque by truck from its two Four Corners refineries, which had a total capacity of 37,000 barrels per day. Western supplied Albuquerque from its 124,000 barrel per day refinery in El Paso, Texas via the common carrier Plains Pipeline. ConocoPhillips/Alero, and Holly also delivered product to Albuquerque on their own proprietary pipelines from refineries similar in size to Western's. However, the FTC pointed to marketing and supply constraints that limited the supply responsiveness of these three refiners. Likewise, while many large, sophisticated refineries on the Gulf Coast near Houston could reach El Paso by pipeline, capacity constraints on the Plains Pipeline restricted their ability to reach Albuquerque.

In the eyes of the FTC, the merger raised competitive concerns because these supply constraints gave Giant the ability and incentive to expand production and lower Albuquerque prices, which would diminish with the merger with Western. Declining crude oil production in the Four Corners area had caused Giant's refinery utilization rate to fall from 72 percent in 2002 to 60 percent in 2006.² To combat this problem, Giant acquired a pipeline capable of delivering crude oil from West Texas that it expected to place in service in 2007. The FTC argued that, given Albuquerque's supply constraints, Giant's output expansion was likely to substantially lower prices in the absence of the merger. Based on documentary evidence and analysis from its economic expert, Hal White, the FTC argued that Albuquerque prices would decline between 6 and 10 cents per gallon (cpg) in the absence of the merger.³ The upper end of that range would

trucking from El Paso, then Giant's supply is inframarginal and Albuquerque prices would continue to be determined by the cost of trucking from El Paso.

Consequently, the state of affairs was such that both the FTC and the merging parties claimed that Albuquerque prices would not change if the merger were to proceed. The FTC,

retail, and retail prices reflect consumer

post merger periods, as documented in Table 3. These features of the data support estimating equation (1) in differences rather than levels. Additionally, differences across control cities support estimating equation (1) pairwise rather than pooling all four cities into a single equation.¹¹

Estimating equation (1) in differences also ameliorates nonstationarity problems often apparent in

negative. However, recall that under the FTC's theory, gasoline prices should have fallen 6 to 10 cpg in the absence of the merger due to the output expansion at Giant's refineries. While the Newey-West estimates are generally larger than those using Prais-Winsten, they are in fact generally in the range the FTC's theory would predict in the absence of the merger. This suggests the merger itself would not be associated with an anticompetitive effect. That said, the results display some notable inconsistencies apart from just differences in the coefficient estimates for

As another robustness check, I also ran a series of regressions using various four year subsamples of the data and testing for placebo merger effects in each week of the data prior to the actual merger. Figure 6 plots the coefficient estimate and confidence interval for each placebo merger dummy, estimating equation (1) by OLS with Newey-West standard errors for Albuquerque gasoline rack prices relative to El Paso. For example, the first point on the chart represents the coefficient estimate (and 95 percent confidence interval) for a placebo merger dummy that occurs on January 1, 2002, using data from January 1, 2000 to January 1, 2004. The final point on the chart uses data from May 31, 2003 to May 31, 2007 with a placebo merger occurring on May 31, 2005.

The results graphed in Figure 6 show that Albuquerque prices often shifted relative to El Paso in the pre merger period, and by an order of magnitude (as high as 4cpg) similar to the estimated merger effect in Table 4 and the FTC's predicted 6-10cpg effect. Using Newey-West standard errors, the placebo results were statistically significant at the 0.1 level.

Ultimately, El Paso remains the best available control city. While the placebo tests using Newey-West standard errors raise some concern about its overall validity as a control, the results using Prais-Winsten (especially while controlling for known events in the pre-merger period) are more reassuring. Since the actual merger effect estimates in Table 4 do not differ substantially across estimation methods, at least for gasoline and diesel rack prices (while retail prices point in the same direction), El Paso appears to be a viable control market. In addition, since the result persists across the various subsamples of the data in Table 7, it seems fair to conclude that the El Paso results provide a reasonable estimate of the change in Albuquerque prices after the merger – including, potentially, effects from the output expansion at Giant.

The El Paso results suggest that the Western/Giant merger was associated with a decline in prices of about 3.4¢ per gallon at rack and 4.8¢ per gallon at retail. These estimated price declines fall short of the FTC expert's predicted 10¢ per gallon decline that would have occurred but for the merger, but are more consistent with the documentary evidence that suggested a 6.8¢ per gallon decline. The larger

5. Conclusions

During the same month as the Western/Giant trial, the Director of the FTC's Bureau of Economics testified in Congress regarding the Commission's "particularly vigilant" enforcement in the petroleum industry: "Unlike in other industries, the Commission has brought enforcement actions (and obtained merger relief in many cases) in petroleum markets that are only moderately concentrated."¹⁵ Thus, the Western/Giant merger presents an interesting case for retrospective analysis due not only to the Commission's unsuccessful challenge thereby creating a data point for a consummated merger that exceeded the agency's threshold for likely consumer harm, but also because that threshold is admittedly low for the petroleum industry. Such a policy seems worthy of scrutiny, even if this merger retrospective provides only a single observation regarding its effectiveness.

Moreover, this retrospective is also informative about the tools of prospective merger analysis. The evidence suggests that, if anything, Albuquerque prices declined in the wake of the merger, at least relative to El Paso. Both the Commission and the merging parties predicted that prices would remain unchanged after the merger, although the Commission's analysis did admit the possibility for prices to fall. The parties' assertion that pre merger supply was highly (if not perfectly) elastic— that any additional production at Giant's refineries would simply be backed out by other suppliers (Opinion ¶ 442)— appears inconsistent with the observed decline in prices by several cents per gallon. For its part, the Commission may have underestimated the willingness of other suppliers to increase shipments to Albuquerque, which could be the source of the price decrease. Unfortunately, the firm specific quantity data that might identify the source of any such increase in production is proprietary. As was expected at the time of the merger (Opinion ¶ 121), Holly completed a 15,000 bpd expansion of its Navajo refinery in early 2009— roughly the size same as Giant's output expansion— although that appears to be too late to explain the entirety of estimated price effect.

Finally, this study also provides some perspective on econometric methods in retrospective merger analysis. Estimating equation (1) by OLS with autocorrelation consistent (Newey/West) standard errors may be overly precise, in terms of the frequency with which many of the placebo merger dummies were statistically significant, but appears less sensitive to small changes in the underlying data than does the explicit inclusion of an AR(1) error term estimated by Prais/Winsten. In this particular instance, Newey/West and Prais/Winsten produced sufficiently similar estimates that permit at least some tentative inference about the path of post merger prices. However, the difficulties inherent in reaching even this simple conclusion highlight the challenges facing antitrust authorities in petroleum markets, in which relatively small yet hard to identify price effects of a few cents per gallon can lead to millions of dollars of consumer harm on an annual basis.

¹⁵ See "Prepared Statement of the Federal Trade Commission Petroleum Industry Consolidation" by Michael A. Salinger, May 23, 2007, available at <http://www.ftc.gov/os/testimony/070523PetroleumIndustryConsolidation.pdf>

References

Ashenfelter, Orley, Daniel Hosken, and Matthew Weinberg (2009). "[Generating Evidence to](#)

Figure1: RefinedProductsSupplyto Albuquerque.

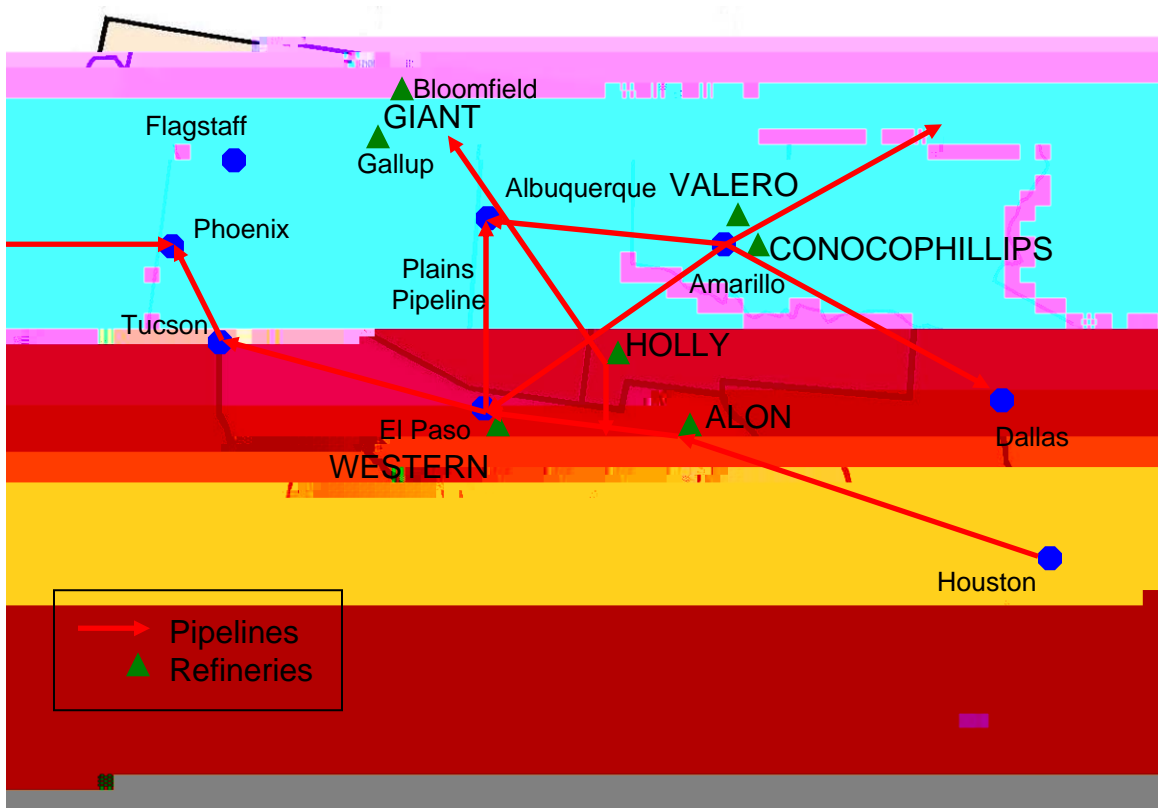


Figure2: Weekly Gasoline Rack Price Levels in Albuquerque and Control Cities

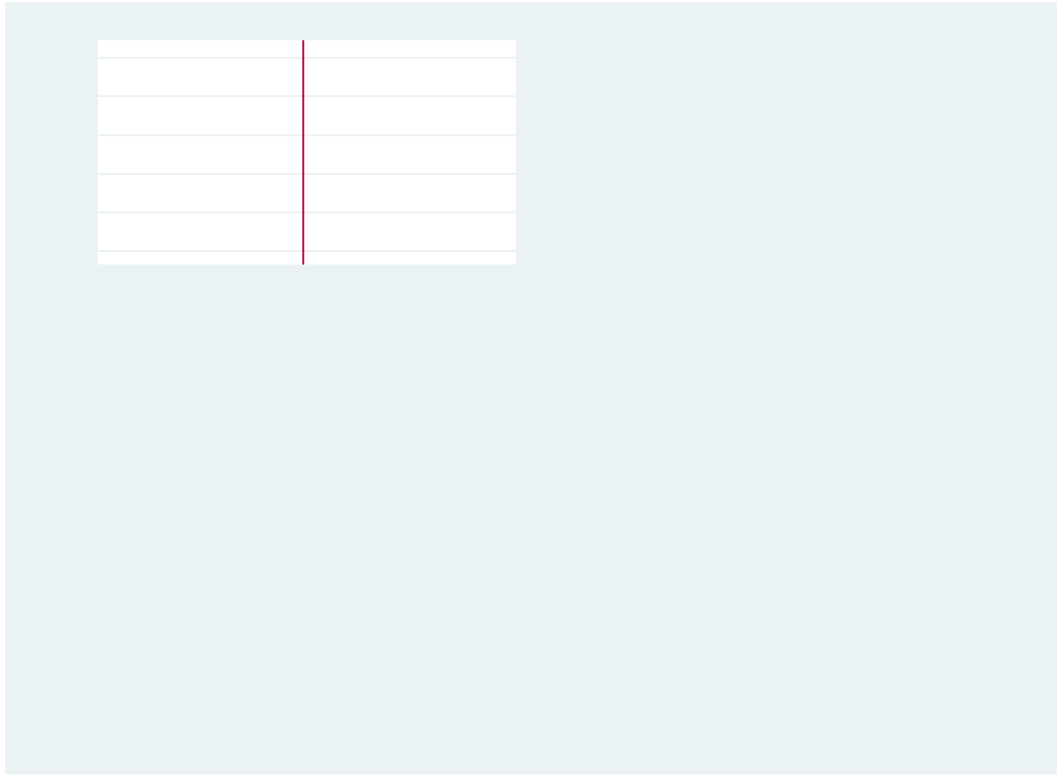


Figure3: Weekly Gasoline Rack Price Differentials between Albuquerque and Control Cities.

Figure4: Autocorrelationsand Partial

Figure 5: Monte Carlo Comparison of Newey-West and Prais-Winsten,

Figure7: PlaceboMerger Dummies,RackGasolinePricesRelativeto ElPaso,PraisWinsten Estimation.

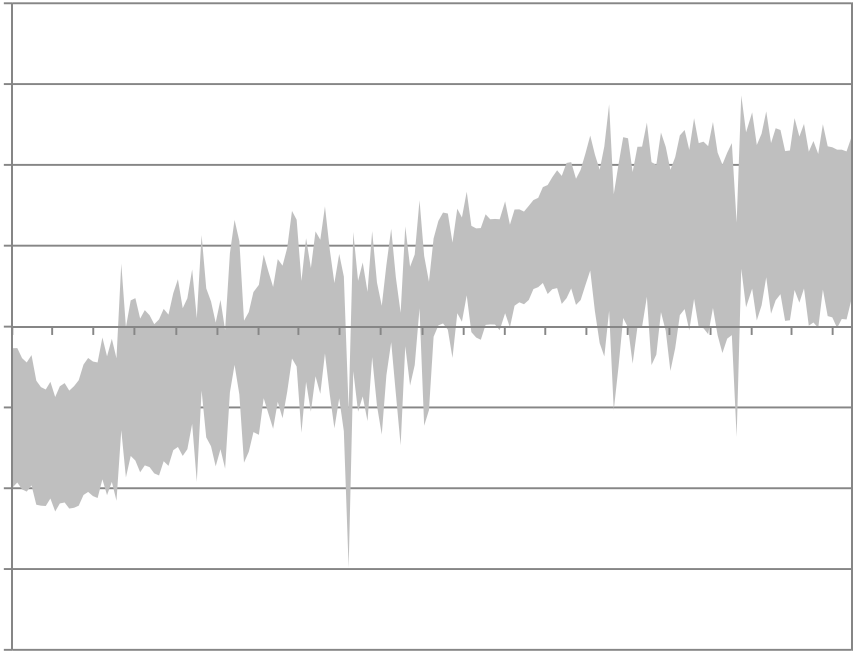


Table 2: Comparison of Treatment and Control Cities, May 2005 to May 2009.

	Albuquerque	El Paso	Amarillo	Flagstaff
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Table5: Impact of Merger on Albuquerque Retail Prices Relative to Amarillo.

	Product Level	Gasoline		Diesel	
		Rack	Retail	Rack	Retail
OLS	Merger Effect	-3.082***	-6.409***	0.478	-12.003***
	Newey-West s.e.	(1.161)	(1.522)	(1.876)	(1.193)
Prais-Winsten	Merger Effect	2.661	-3.267	-3.843	-8.767***
	s.e.	(2.466)	(3.403)	(2.603)	(2.462)
	AR(1)	0.941	0.861	0.868	0.811

Notes: N = 209. Each regression includes month fixed effects. Diesel regressions include dummy variables controlling for differences in the Albuquerque specification of diesel between March 2005 and December 2006. Asterisks indicate significance at the 90, 95, and 99 percent levels.

Table6: Impact of Merger on Albuquerque Retail Prices Relative to Flagstaff.

	Product Level	Gasoline		Diesel	
		Rack	Retail	Rack	Retail
OLS	Merger Effect	3.869*	0.327	-8.518***	-3.102*
	Newey-West s.e.	(2.023)	(2.025)	(3.057)	(1.615)
Prais-Winsten	Merger Effect	3.574	0.800	-2.093	-2.290
	s.e.	(3.950)	(4.516)	(4.740)	(3.366)
	AR(1)	0.794	0.908	0.813	0.863

Notes: N = 209. Each regression includes month fixed effects. Diesel regressions include dummy variables controlling for differences in the Albuquerque specification of diesel between March 2005 and December 2006. Asterisks indicate significance at the 90, 95, and 99 percent levels.

Table7: Robustness of Merger Impact on Albuquerque/EIPaso Gasoline Rack Price Differential across Various Subsamples.

	Baseline, 2005-2009	Drop 1st Year Post merger	Event Dummies	All Data, 2000-2009	Monthly Data, 2005-2009
	Merger Effect	4.370***	5.738***	4.693***	2.139***
Newey-West s.e.	(0.751)	(0.745)	(1.732)	(0.610)	(1.317)
N	209	157	209	490	49

Notes: Each regression includes month fixed effects. Asterisks indicate significance at the 90, 95, and 99 percent levels.

Table 8: Frequency with which Confidence Interval on Placebo Merger Dummies Includes Zero.

Estimation Method Include controls?	Newey-West		Prais-Winsten	
	No	Yes	No	Yes
Gasoline Rack	16%	34%	53%	81%
Gasoline Retail	23%	45%	59%	94%
Diesel Rack	36%	20%	97%	97%
Diesel Retail	31%	44%	84%	95%

Notes: Using EIPascã as the control city. Each entry refers to the

