WORKING PAPERS

Price Effects from the Merger of Agricultural Fertilizer Manufacturers Agrium and PotashCorp

Nicholas Kreisle *
Federal Trade Commission

Abstract

In 2018, Agrium and PotashCorp merged to become the world's largest manufacturer of potash, from which potassium is extracted for use as one of the three main nutrients in agricultural fertilizer. The merged firm held a 60 percent share of North American capacity, suggesting the merger may have been close to the enforcement margin. This paper studies the effects of the merger on North American potash prices relative to offshore prices and other crop nutrients. The evidence does not indicate that the firms were able to impose an anticompetitive price increase in the wake of the merger.

1. Introduction

Renewed calls to strengthen antitrust enforcement, and merger review in particular, often aim to use these policy tools as potential vehicles for increasing economic growth and reducing inequality.[1] While these arguments generally present aggregate statistics, merger review is conducted on a caserbycase basis. Retrospective analysis of mergers near the enforcement margin helps inform the question of whether current antitrust policy is too strong or too weak. This paper studies the merger of two North American crop nutrient fertilizer manufacturers, which is a particularly fitting subject because the agricultural sector is one of the areas where observers have noted concerns about rising concentration leading to higher input prices paid by farmers and higher food prices paid by consumers.[2] Focusing on agriculture also broadens the scope of the merger retrospective literature, which tends to study retail and formerly regulated industries, where data is more readily available.

Three primary nutrients – nitrogen, phosphate, and potassium (potash) – are used to make agricultural fertilizer. While each nutrient requires a different production process, several manufacturers produce all three. When Agrium and PotashCorp announced a $36 billion merger to form the world's largest crop nutrient company in September 2016, some industry observers expected antitrust authorities to focus their regulatory review on potash, as the companies controlled 60 percent of North American potash capacity, compared to only 2 [illegible] 0.00j/TTkugh13Tc4.4480Td(review)Tj/T101Tf()if()Tj/TT11TTf0Tc1.2790Td[po

The term potash refers to a variety of

However, in this case, a comparison with the prices of other crop nutrients could still be informative as to the merger's impact.

Phosphorus fertilizer supply shares many similarities with potash. Production begins with the mining of

Figure 1 plots each of the price series, with the thicker line representing the potash (MOP) price in the Corn Belt. The other potash prices, in Brazil and (for standard grade) in Southeast Asia, follow similar trends before and after the merger. All crop nutrient prices were trending upward just prior to merger, and followed just after in price (as the [illegible])

controls are not available in every control market, so these shifters are sometimes excluded as a robustness check. In every specification, X_t incorporates monthly dummies to allow for seasonality. Crop nutrient fertilizers can be applied in spring alongside seed planting, or after the fall harvest. Fertilizer is bought and sold yearrround, and easily inventoried at various stages of the supply chain.

I estimate equation (1) via OLS separately for each of the available control markets. The identifying assumption is that supply and demand shocks not included in X_t affect treatment and control markets equally. In that case, differencing allows us to interpret τ as the (logrpoint) change in prices associated with the merger. Given traderrelated developments in 2019, alternate versions of (1) estimate the postr merger variable separately for 2018 and 2019.

As an alternative specification, I also estimate the full panel of data using the following equation:

4. Results and Discussion

As context for estimating equation (1), Figure 2a plots the logrpoint difference between the price of Corn Belt MOP and the price of Brazil MOP, as well as the difference between the Corn Belt (granular MOP) and Southeast Asia (standard MOP) prices. Figure 2b plots the difference between Corn Belt MOP and nitrogen (urea) and phosphate (DAP) prices. For each of the available control markets, the figures generally do not show an increase in the price difference – the dependent variable in equation (1) – after the merger closed in January 2018. The only exception is that the difference relative to DAP increases in 2019, but as seen in Figure 1 this is more an artifact of declining DAP prices than increasing

Table 4: Estimated Merger Effects Relative to Individual Control Markets

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CONTROL MARKET:	MOP Brazil	MOP Brazil	MOP Brazil	MOP Brazil	Std. MOP	Std. MOP	Std. MOP	Std. MOP
Year=2018		0.152***		0.147***		0.017		0.017
		(0.016)		(0.017)		(0.022)		(0.021)
Year=2019		0.134***		0.194***		0.019		0.059
		(0.019)		(0.017)		(0.021)		(0.036)
PostMerger (2018r19)	0.143***		0.164***		0.018		0.032	
	(0.017)		(0.015)		(0.020)		(0.024)	
lnCornPriceUS			0.614***	0.757***			0.255	0.385
			(0.143)	(0.138)			(0.202)	(0.255)
lnMiningWageSK			0.073	0.125			0.139	0.187
			(0.074)	(0.075)			(0.097)	(0.114)

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
CONTROL MARKET:	DAP	DAP	DAP	DAP	Urea	Urea	Urea	Urea
Year=2018		0.065***		0.058***		0.096***		0.097***
		(0.020)		(0.019)		(0.033)		(0.035)
Year=2019		0.180***		0.135***		0.001		0.037
		(0.030)		(0.039)		(0.038)		(0.041)
PostMerger (2018r19)	0.057		0.011		0.047		0.076***	
	(0.045)		(0.033)		(0.035)		(0.026)	
lnCornPriceUS			1.234***	0.640**			0.529*	0.345
			(0.251)	(0.265)			(0.281)	(0.379)
lnMiningWageSK			0.238	0.019			0.271	0.204
			(0.152)	(0.101)			(0.193)	(0.218)

NeweyrWest standard errors in parentheses
N=60 in each specification
*** p<0.01, ** p<0.05, * p<0.1

Across all Across 8q2=

Figure 3: Estimated Difference between Time Fixed Effects for Corn Belt MOP and Control Prices[29]

5. Conclusion

In its review of the Agrium/PotashCorp merger the FTC had to evaluate whether a substantial increase in the concentration of North American potash capacity would hurt US farmers and consumers. Aggressive intervention could have widerranging impacts. USDA estimates that agriculture and related industries accounted for 5.4 percent of U.S. gross domestic product in 2017, and 11 percent of employment.[30] Ultimately, while the Federal Trade Commission required divestitures related to nitrogen and phosphate, it placed no restrictions on the firm's consolidation of 60 percent of North American potash production capacity. Especially in light of a history of export cartel behavior, this combination of potash producers may have been close to the enforcement margin. Retrospective analysis of potential

would be on the merger's labor market effects. The control variable used in this study is the average Saskatchewan wage for all

References

Ashenfelter, Orley C., Daniel S. Hosken and Matthew C. Weinberg (2013), "The Price Effects of a Large Merger of Manufacturers: A Case Study of MaytagrWhirlpool," American Economic Journal: Economic Policy, Vol. 5, No. 1 (February 2013), pp.239r261.

Fuglie, Keith, Paul Heisey, John King, and David Schimmelpfennig (2012), "Rising Concentration in Agricultural Input Industries Influences New Farm Technologies." U.S. Department of Agriculture (USDA).

Government Accountability Office (2009), "Concentration in Agriculture," GAOr09r746R.

Shields, Dennis A. (2010), "Consolidation and Concentration in the U.S. Dairy Industry," Congressional Research Service Report R41224.

Weinberg, Matthew C. (2008), "The Price Effects of Horizontal Mergers," Journal of Competition Law & Economics, 4(2), 433–447.

Appendix

Table A1: Results using only two years of prermerger data (compare to Table 4)

VARIABLES	(1) MOP Brazil	(2) MOP Brazil	(3) MOP Brazil	(4) MOP Brazil	(5) StdMOP	(6) StdMOP	(7) StdMOP	(8) StdMOP
Year==2018		0.121***		0.132***		0.023		0.033**
		(0.015)		(0.015)		(0.017)		(0.015)
Year==2019		0.102***		0.161***		0.020		0.079***
		(0.018)		(0.022)		(0.021)		(0.021)
PostMerger (2018r19)	0.111***		0.136***		0.021		0.040**	
	(0.015)		(0.015)		(0.017)		(0.016)	
lnCornPriceUS			0.397***	0.549***			0.394***	0.630***
			(0.128)	(0.167)			(0.126)	(0.154)
lnMiningWageSK			0.065	0.106			0.077	0.013
			(0.073)	(0.084)			(0.062)	(0.059)

VARIABLES	(9) DAP	(10) DAP	(11) DAP	(12) DAP	(13) Urea	(14) Urea	(15) Urea	(16) Urea
Year==2018		0.033*		0.033**		0.080**		0.074*
		(0.017)		(0.016)		(0.039)		(0.041)
Year==2019		0.211***		0.204***		0.018		0.055
		(0.024)		(0.035)		(0.048)		(0.082)
PostMerger (2018r19)	0.089*		0.001		0.031		0.055	
	(0.044)		(0.038)		(0.041)		(0.041)	
lnCornPriceUS			1.387***	0.164			0.231	0.430
			(0.316)	(0.254)			(0.394)	(0.613)
lnMiningWageSK			0.224	0.108			0.231	0.052
			(0.173)	(0.075)			(0.209)	(0.239)

NeweyrWest standard errors in parentheses
N=48 in each specification
*** p<0.01, ** p<0.05, * p<0.1