Retailer Response to Price Gouging Litigation and Consumer Food Prices

Daniel Scheitrum[a*]; K. Aleks Schaefer[b]; Tina Saitone[c]

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Abstract

The COVID-19 pandemic fundamentally changed how consumers obtained food with a dramatic shift out of food service and restaurants into grocery retail. At the onset of the pandemic, prices of a variety of goods, including groceries, increased rapidly. In many cases, U.S. states filed lawsuits alleging price gouging behavior of food retailers and producers. In this paper, we examine the case of eggs and find that price gouging litigations lead to a dramatic change in retailer behavior, long after the resolution of many of these disputes. We find that retailers responded by rigidly adhering to pre-pandemic price levels for eggs, despite that fact that costs of production of eggs increased sharply during this time. We determine a breakdown in the pre-pandemic relationship between input costs and output prices for eggs. Additionally, we find that retailers significantly decreased their purchases of eggs and reduced the number of advertisements they placed for eggs, suggesting they are now willing to accept empty shelves in lieu of increasing prices.

Keywords: Price gouging, COVID-19, food retailing, eggs

JEL Codes: Q11, K2

[a*] Corresponding author: Department of Agricultural and Resource Economics, University of Arizona. dpscheitrum@email.arizona.edu
[b] Department of Agricultural Economics, Oklahoma State University. aleks.schaefer@okstate.edu
[c] Department of Agricultural and Resource Economics, UC Davis. saitone@primal.ucdavis.edu

1 Introduction

The onset of the COVID-19 pandemic drastically altered food consumption behavior and shifted consumption away from restaurants and food service in favor of grocery retail. Alongside increased grocery retail demand increases, retail prices have spiked for some staple food products. Consequently, consumer groups and state attorneys general filed a flurry of lawsuits alleging food retailers (Albertson's, Costco, H.E.B, Kroger, Trader Joe's, Walmart) and distributors engaged in anti-competitive behavior in the form of price gouging (Progressive Grocer, 2020). Price gouging protections are not present in all states, and those states that do have them differ in how they specify these consumer protections (Morton, 2021). Generally, price gouging laws activate only during a state of emergency and prohibit producers and retailers of essential goods from increasing prices above some threshold, relative to prices before the declaration of emergency.

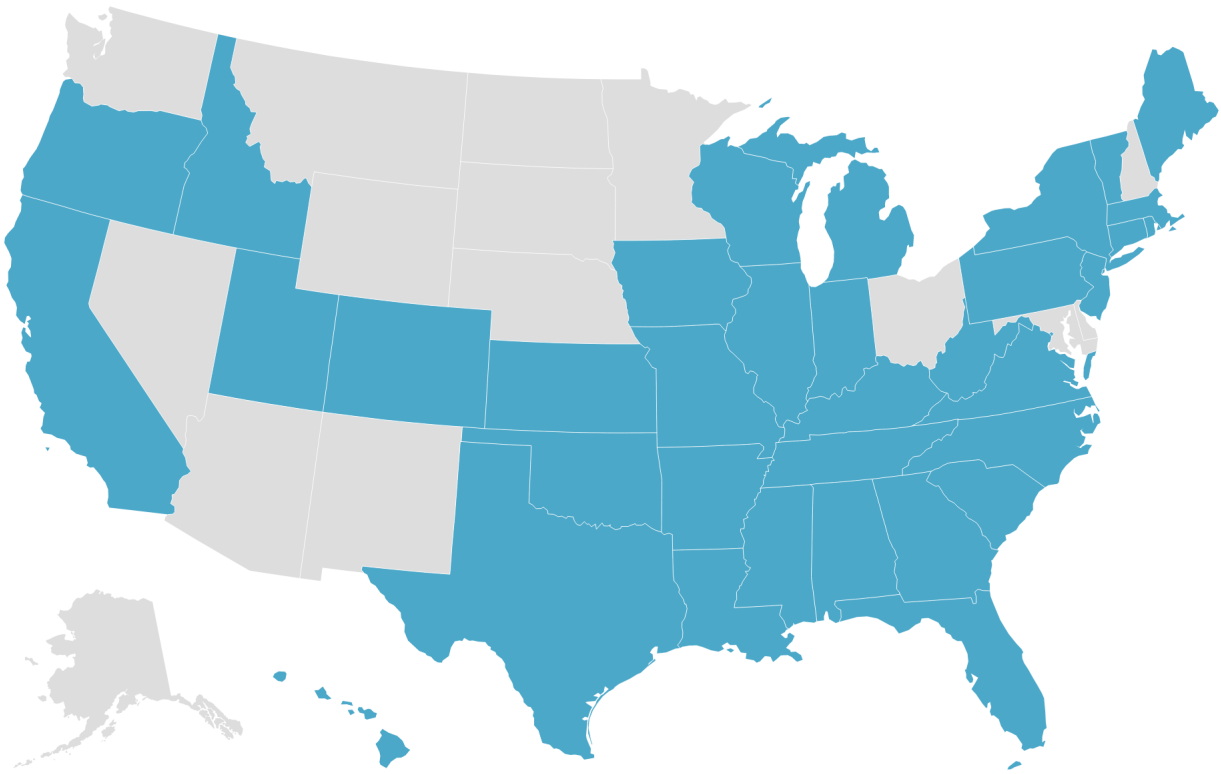
Price gouging laws are designed to protect consumers from skyrocketing prices, but are they beneficial to food consumers in practice? In this research, we analyze this question by studying the responses of food retailers to price gouging litigation in the case of eggs. The increase in grocery demand for eggs, a storable animal protein, led to sharp price increases; 200-300% price jumps over the course of just a few weeks, despite declarations of states of emergency, which activated price gouging protections. Several states have filed price gouging lawsuits against egg producers (Sexton and Sumner, 2020), and although the majority of the suits have been dismissed or settled (Ondeck et al., 2021), retailers have ongoing concerns about pricing strategies.

2 Background

Price gouging protections generally activate following a declaration of state of emergency by a state governor (Morton, 2021). Most states then place price limitations on certain goods whereby prices are prohibited from increasing relative to a benchmark price measured as the

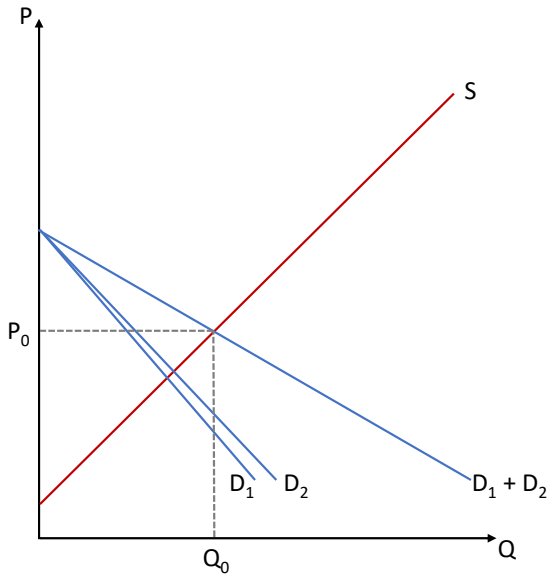
average price during a window of time preceding the declaration of emergency. The classic example of price gouging protections concern gasoline prices during extreme weather such as hurricanes or severe snowstorms. The intention is to protect consumers from high prices during a time of need and to prevent retailers from exploiting panicking customers (Beatty, Lade and Shimshack, 2021). However, with widespread emergencies such as the global Covid pandemic, there are no geographical limitations on areas affected by the emergency. All U.S. states are uniformly affected by the emergency. However, not all states have laws the allow for price gouging protections. Further, not all governors in states which do have these protections will all elect to activate them at the same time or in the same way. This differential implementation of price limits can yield unintended consequences of goods flowing to the regions without price limits and leading to shortages in regions with strict price limits in place (Sexton and Sumner, 2020). Figure 1 shows the U.S. states with price gouging laws shaded in blue. States without these laws are shaded gray.

Figure 1: U.S. States with Price Gouging Protections



To illustrate the product divergence concern, Figure 2 represents a market in equilibrium before an emergency which would cause a demand shock. In this scenario, there are two regions demanding this product, represented by D_1 and D_2. The total market demand of these two regions together is $D_1 + D_2$. The equilibrium is reached where total demand meets supply, S. In this case, a quantity Q_0 is traded at a price P_0.

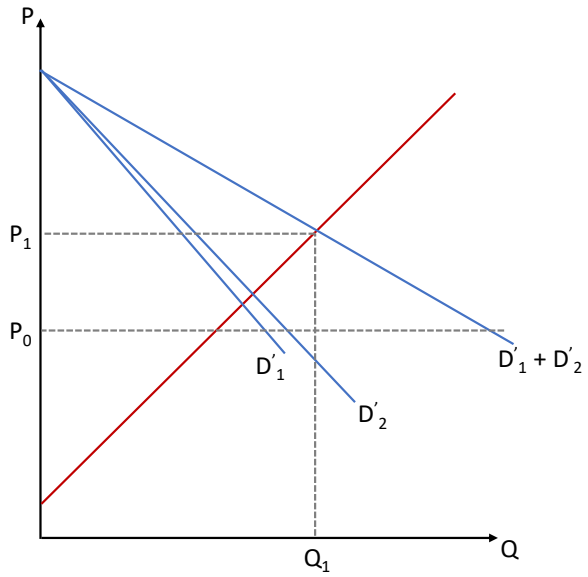
Figure 2: Market Equilibrium before Shock



In Figure 3, we introduce a shock to the market that dramatically drives up demand in both regions. Supply is unaffected by the shock and we assume no price gouging protections are activated. In this case, the quantity consumed increases to Q_1 and the price increases from P_0 to P_1.

In Figure 4, we allow for price gouging protections to be activated in region 2. The consequence of that is that no transactions may take place in region 2 above the reference price which is P_0, the equilibrium price before the shock. This alters the demand from region 2 to be zero for all prices above P_0 and to be their full demand curve at prices P_0 and below. This results in a kinked demand curve represented by D_2''. The resulting market demand also has a a kinked shape where the market demand is simply equal to D_1 for prices above P_0 and is equal to the sum of both demands at P_0 and below. In this example (albeit an exaggerated

Figure 3: Market Equilibrium after Shock

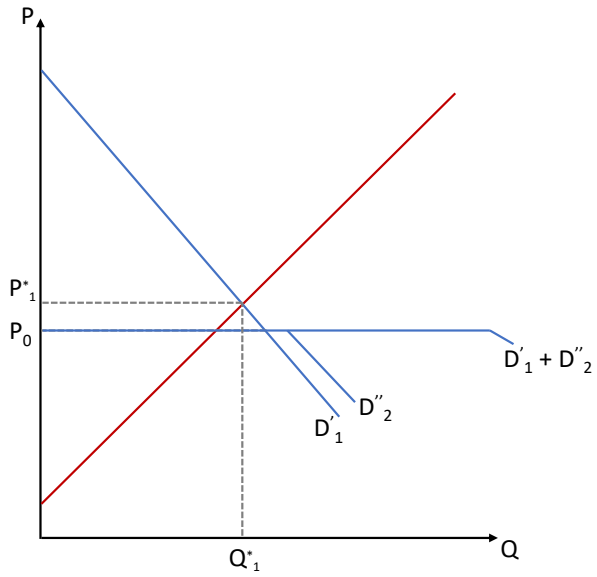


case), the new equilibrium after price protections are introduced is the quantity Q_1^* trading at a price P_1^*. This quantity is sold entirely to region 1 and region 2 is left without any product despite a demand in excess of the equilibrium price. While this theoretical example is an extreme case, it does illustrate shortcomings of price gouging laws, particularly during emergency conditions which span the boundaries of regions with and without price gouging protections.

3 Covid-19 Price Gouging Claims

The onset of the COVID-19 pandemic led to an upheaval of how Americans live their lives and spend their time. Closure of bars and restaurants led to a fundamental change in how Americans accessed food. Up to the start of the pandemic, expenditure on food away from home was rapidly growing and even outpaced expenditures on food at home (Ellison et al., 2021). However, after the closure of the food service industry and the imposition of stay-at-home orders, American spending at grocery stores and online food delivery increased dramatically (Grashuis, Skevas and Segovia, 2020). While some products experienced supply

Figure 4: Market Equilibrium after Shock with Price Gouging Protections in Place



chain disruptions and panic buying (e.g. toilet paper and cleaning supplies), other goods suffered no disruptions (Kirk and Rifkin, 2020). The price of eggs increased sharply from less than 50¢per dozen in January 2020 to over $1.50 per dozen in March 2020. Numerous attorneys general filed price gouging lawsuits against food retailers and egg producers and cited the 300% increase in egg price as evidence of price gouging behavior.

Price gouging lawsuits alleging the unfair pricing of eggs were filed in California, Minnesota, Texas, New York, and West Virginia. Other products were also alleged to have been the subject of price gouging, including gasoline, cleaning products, hand sanitizer, N95 masks, and paper products. The egg price gouging lawsuits eventually narrowed their focus to egg producers and released food retailers from scrutiny.

Egg price gouging lawsuits in California, Minnesota, and New York have settled resulting in defendant egg producers donating large quantities of eggs or sums of money to food banks (Ahumada, 2022; Ellison, 2021; James, 2021). The case in Texas was dismissed (Graber, 2020).

This paper explores the impacts of price gouging allegations after the fact. We examine the case of eggs and find that price gouging litigations lead to a dramatic change in retailer

behavior, long after the resolution of many of these disputes. We find that retailers responded by rigidly adhering to pre-pandemic price levels for eggs, despite that fact that costs of production of eggs increased sharply during this time. The price of feed (mainly soybeans and corn) is the primary driver of the cost of production of shell eggs. Figure 5 presents the price histories of corn, soybeans, and shell eggs from January 2015 to September 2021. Egg prices spiked in March 2020 to over \$1.50/dozen but then quickly returned to pre-pandemic levels throughout there rest of the time horizon. This return to pre-pandemic price levels is curious because the costs of feed inputs, corn and soybeans, were dramatically climbing at this time. The price of soybeans increased from \$8.50/bushel in March 2020 to \$14.50/bushel in June 2021. Over this same time period, corn prices jumped from \$3.68/bushel to \$6.00/bushel. Egg producers have pointed to the sharp increased in feed costs and no accompanying increase in shell egg prices as harming the egg industry. We examine the relationship between shell egg wholesale prices and the main egg input costs to determine if there is a break in the relationship before and after the Covid-19 pandemic. We then estimate what prices would have been had the pre-pandemic relationship persisted.

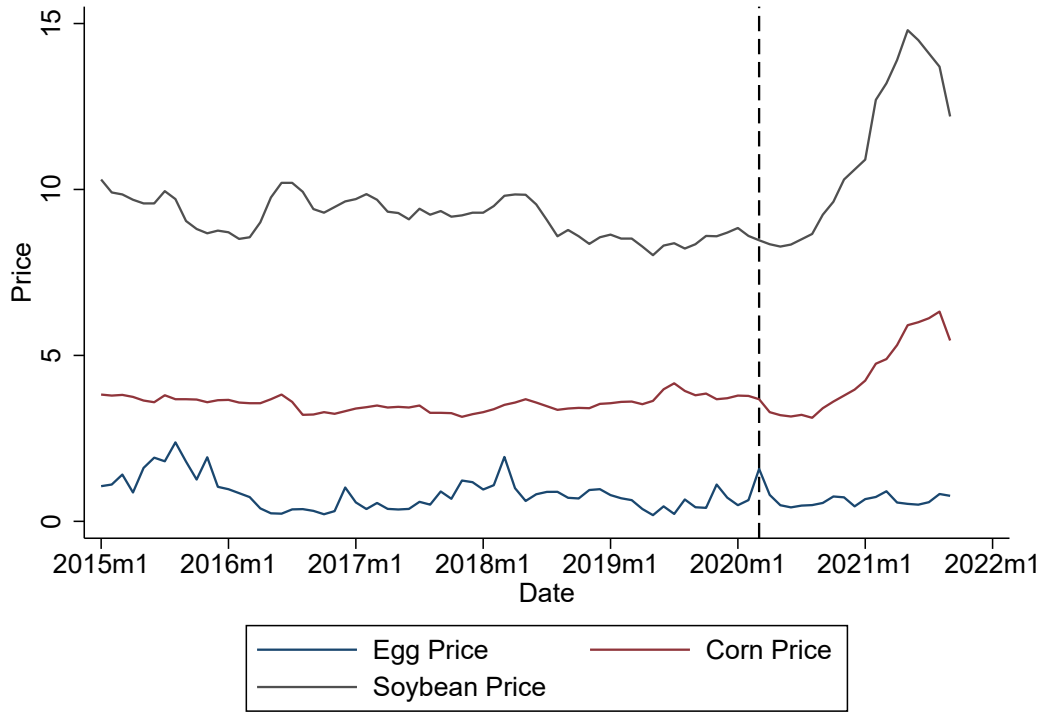
4 Methodology

We examine historical prices of inputs in egg production and wholesale egg prices to determine the relationship between input and output prices in the egg market. We employ a vector-error-correction model (VECM) to estimate this relationship (Engle and Granger, 1987). First, we estimate the model on data from January 2015 through March 2020 to establish the pre-pandemic price relationship. To assess the impact of price gouging lawsuits, we estimate estimate the following VECM (Engle and Granger, 1987):

$$\Delta j_t = \alpha^j z_{t-1} + \sum_{i=1}^{2} \left(\gamma_i^j(L)\, \Delta \text{Egg}_{t-i} + \delta_i^j(L)\, \Delta \text{Corn}_{t-i} + \lambda_i^j(L)\, \Delta \text{Soy}_{t-i} + \eta_i^j(L)\, \Delta \text{Diesel}_{t-i} \right) + e_t^j \quad (1)$$

where $\Delta j_t; j \in \{\text{Egg, Corn, Soybean, Diesel}\}$ is the difference between price j (expressed in

Figure 5: Egg Wholesale and Input Prices



Source: USDA

natural logarithmic form) at month t and $t-1$. The VECM is estimated with a double-lag structure, as is the optimal lag specification according to the Akaike Information Criterion (AIC) (Akaike, Petrov and Csaki, 1973). This paper applies the methodology established in (Carter, Schaefer and Scheitrum, 2021).

Coefficient estimates describing the historical long-run equilibrium relationships between shell-egg and price shifter prices are reported in Table 1. Referring to the estimates in Table 1, we see that the error correction term α in the shell-egg equation is negative and statistically significant at 99%. This suggests that monthly shell-egg prices adjust downward to correct short-run deviations from the long-run trend. The estimated value of the error correction parameter $\alpha = -0.18$ indicates that (on average) the monthly shell-egg price adjusts to correct 17.8% of any deviation from the long-run trend. The magnitude and significance of the error correction parameter indicates that price deviations from long-run equilibrium are corrected relatively quickly.

Table 1: Supply-Shifter VECM Coefficient Estimates

Short-Run Equation		
	Variable	Value
ΔEgg		
	α	-0.18
		(0.06)
	ΔEgg_{t-1}	-0.29
		(0.12)
	ΔCorn_{t-1}	-0.80
		(2.01)
	$\Delta\text{Soybean}_{t-1}$	0.82
		(2.37)
	$\Delta\text{Diesel}_{t-1}$	-2.53
		(1.91)
	constant	0.00
		(0.05)
ΔCorn		
	α	0.00
		(0.01)
	ΔEgg_{t-1}	0.00
		(0.00)
	ΔCorn_{t-1}	0.00
		(0.21)
	$\Delta\text{Soybean}_{t-1}$	0.00
		(0.14)
	$\Delta\text{Diesel}_{t-1}$	0.00
		(0.19)
	constant	0.15
		(0.00)
ΔSoybean		
	α	0.00
		(0.01)
	ΔEgg_{t-1}	0.00
		(0.01)
	ΔCorn_{t-1}	0.00
		(0.01)
	$\Delta\text{Soybean}_{t-1}$	0.00
		(0.28)
	$\Delta\text{Diesel}_{t-1}$	0.00
		(0.34)
	Constant	0.11
		(0.00)
ΔDiesel		
	α	0.00
		(0.00)
	ΔEgg_{t-1}	0.00
		(0.01)
	ΔCorn_{t-1}	0.00
		(0.28)
	$\Delta\text{Soybean}_{t-1}$	0.00
		(0.15)
	$\Delta\text{Diesel}_{t-1}$	0.00
		(0.37)
	constant	0.14
		(0.00)

Long-Run Equation†	
	Value
Ln Corn Price	2.25
	(3.27)
Ln Soybean Price	-12.50
	(2.92)
Ln Diesel Price	-6.03
	(1.47)
Constant	26.74

Note: Degrees of Freedom = 54.
Δ denotes variable is first-differenced. Standard errors in parentheses.
†Ln Egg Price normalized to 1 in each equation.

We use the predicted dynamic equilibrium relationships in Table 1 to generate a counterfactual series of shell egg prices that would have resulted from March 2020–September 2021. Figure 6 plots counterfactual prices versus actual shell egg prices (specified in natural logarithmic form) for each region. We generate confidence intervals for these out-of-sample counterfactual prices using a Bayesian bootstrapping procedure with re-sampled draws from the posterior distributions of our predicted error correction coefficient in equation (1).

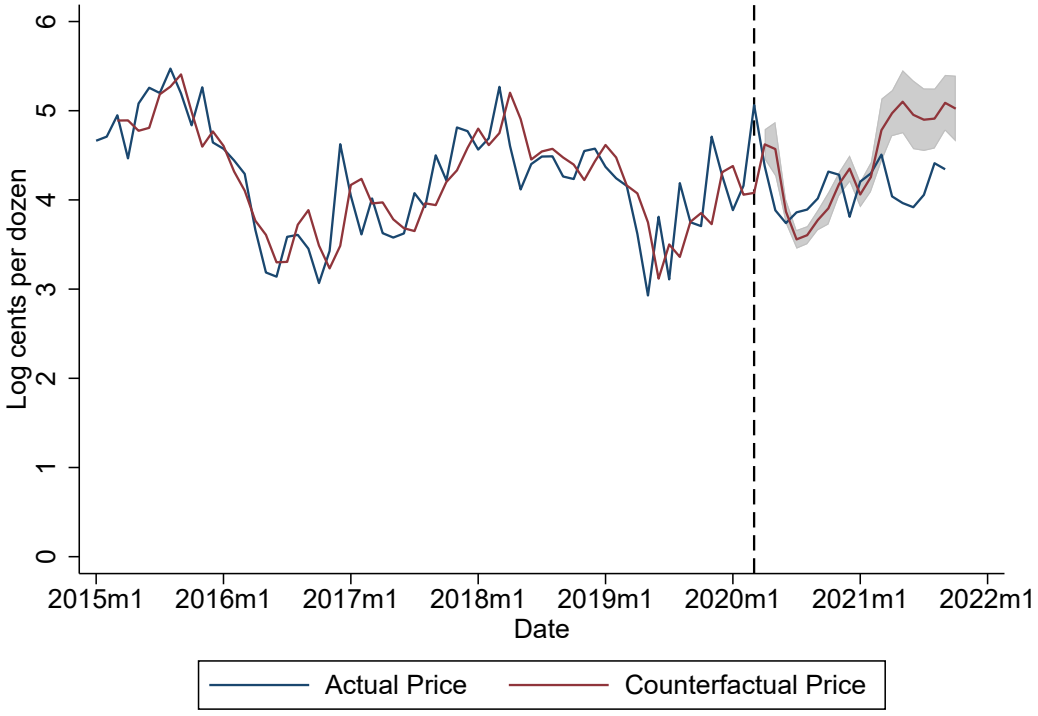
5 Results

Egg prices are largely determined by the price of inputs like corn, soybeans, and energy (Carter, Schaefer and Scheitrum, 2021). Shortly after the initial pandemic lockdowns, egg prices returned to their pre-pandemic levels (Malone, Schaefer and Lusk, 2021), yet input prices climbed dramatically. The margin producers receive has declined sharply following these price gouging suits; suggesting food retailers are unwilling to pay increased prices likely due to fear of litigation. Using USDA data on volumes sold and number of advertisements placed, our results indicate that the quantity of food retailer purchases and advertisements of eggs have plummeted following the price gouging litigations and suggests retailers are willing to accept empty shelves in lieu of increasing prices. Further, the relationship between the prices of inputs in egg production and wholesale egg prices changed fundamentally following the onset of the COVID-19 pandemic. Figure 6 shows that egg prices have stayed depressed through 2021, below where the historical relationship suggests these prices should be given the dramatic rise in input costs.

6 Discussion and Conclusion

When large retailers, with an aversion to possible litigation, respond by rigidly adhering to typical price levels, producers facing higher production costs will be unwilling or unable to supply these large retailers. Given the perishability of commodities, producers will be forced

Figure 6: Price Impact



Source: USDA

to attempt to store unsalable product, take prices that don't cover costs of production, or find alternative market outlets. Consumers are also harmed by retailers' pricing strategies if they are unable to purchase the quantity of eggs they desire, are forced to substitute toward alternative protein sources, or forgo protein altogether. Food shortages and empty shelves harm both producers and consumers, especially the most economically. In light of retailers' pricing strategies, states need to revisit their price gouging protections in order to afford more economic-based considerations to define future violations.

References

Ahumada, Rosalio. 2022. "Yolo County DA reaches settlement with Walmart over egg 'price gouging' during pandemic." *The Scramentoo Bee*, https://www.sacbee.com/news/local/article257083947.html.

Akaike, H., B. N. Petrov, and F. Csaki. 1973. "Information theory and an extension of the maximum likelihood principle."

Beatty, Timothy K. M., Gabriel E. Lade, and Jay Shimshack. 2021. "Hurricanes and gasoline price gouging." *Journal of the Association of Environmental and Resource Economists*, 8(2): 347–374.

Carter, Colin A., K. Aleks Schaefer, and Daniel Scheitrum. 2021. "Piecemeal farm regulation and the US Commerce Clause." *American Journal of Agricultural Economics*, 103(3): 1141–1163.

Ellison, Brenna, Brandon McFadden, Bradley J. Rickard, and Norbert L. W. Wilson. 2021. "Examining food purchase behavior and food values during the COVID-19 pandemic." *Applied Economic Perspectives and Policy*, 43(1): 58–72.

Ellison, Keith. 2021. "Attorney General Ellison reaches settlement in price-gouging lawsuit against Sparboe Farms." *The Office of Minnesota Attorney General Keith Ellison*, https://www.ag.state.mn.us/Office/Communications/2021/10/25_SparboeFarms.asp.

Engle, Robert F., and Clive W. J. Granger. 1987. "Co-integration and error correction: representation, estimation, and testing." *Econometrica: journal of the Econometric Society*, 251–276.

Graber, Roy. 2020. "Lawsuit accusing Cal-Maine of price gouging is dismissed." *Watt Poultry*, https://www.wattagnet.com/articles/40957-lawsuit-accusing-cal-maine-of-price-gouging-is-dismissed?v=preview.

Grashuis, Jasper, Theodoros Skevas, and Michelle S. Segovia. 2020. "Grocery shopping preferences during the COVID-19 pandemic." *Sustainability*, 12(13): 5369.

James, Letitia. 2021. "Attorney General James Delivers 1.2 Million Eggs to New Yorkers." *New York State Office of the Attorney General*, https://ag.ny.gov/press-release/2021/attorney-general-james-delivers-12-million-eggs-new-yorkers.

Kirk, Colleen P., and Laura S. Rifkin. 2020. "I'll trade you diamonds for toilet paper: Consumer reacting, coping and adapting behaviors in the COVID-19 pandemic." *Journal of Business Research*, 117: 124–131.

Malone, Trey, K. Aleks Schaefer, and Jayson L. Lusk. 2021. "Unscrambling US egg supply chains amid COVID-19." *Food Policy*, 101: 102046.

Morton, Heather. 2021. "Price Gouging State Statutes." *National Conference of State Legislatures*, https://www.ncsl.org/research/financial-services-and-commerce/price-gouging-state-statutes.aspx.

Ondeck, Christopher E., John R. Ingrassia, Timothy E. Burroughs, Shannon D. McGowan, and E. Tarr, Jennifer. 2021. "Price Gouging Litigation Continues Apace." *The National Law Review*, https://www.natlawreview.com/article/price-gouging-litigation-continues-apace.

Progressive Grocer. 2020. "Food Retailers Face Pandemic Price-Gouging Lawsuits." *Progressive Grocer*, https://progressivegrocer.com/food-retailers-face-pandemic-price-gouging-lawsuits.

Sexton, Richard J., and Daniel A. Sumner. 2020. "New York's AG Lays a Rotten Egg." *Wall Street Journal*, https://www.wsj.com/articles/new-yorks-ag-lays-a-rotten-egg-11598822036.