

MARKET FAILURE AND NATURAL DISASTERS:
A REEXAMINATION OF ANTI-GOUGING LAWS

David Skarbek

I. Introduction	771
II. Massive Electronic Payment System Failure.....	772
III. Behavioral Economics and Product Market Inefficiency.....	776
A. Availability Heuristic	776
B. Anchoring Heuristic	777
IV. Recommendations.....	778
V. Conclusions	779

I. INTRODUCTION

In *Gouging: Terrorist Attacks, Hurricanes, and the Legal and Economic Aspects of Post-Disaster Price Regulation*,¹ Professor Geoffrey Rapp reviews anti-gouging laws and the economic objections to such regulations. He argues that despite the fact that traditional economic arguments oppose anti-gouging laws, economic justifications nevertheless exist for such post-disaster laws, including the possible failure of electronic payment systems and behavioral insights about economic agents.²

This article first reviews Professor Rapp’s conclusion that economic arguments offer a decidedly negative view of anti-gouging laws. It then analyzes and critiques Professor Rapp’s economic defense of such regulations by (1) applying a standard economic concept—elasticity—and highlighting the role of the market as a discovery process³ and (2) addressing behavioral economics’ assumptions about individuals’ responsiveness to price changes. Finally, this article offers recommendations concerning such laws.⁴

1. Geoffrey C. Rapp, *Gouging: Terrorist Attacks, Hurricanes, and the Legal and Economic Aspects of Post-Disaster Price Regulation*, 94 Ky. L.J. 535 (2005).

2. *Id.* at 553–59.

3. See *infra* Parts II and III.

4. See *infra* Part IV.

David Skarbek (dskarbek@gmu.edu) is in the Economics Ph.D. program at George Mason University. The author thanks Jason Aimone, Eli Dourado, Stewart Dompe, and Emily Schaeffer for helpful comments. This paper could not have been written without Brian Skarbek. The standard disclaimer applies. The author is grateful for the generous financial support of the Earhart Foundation.

II. MASSIVE ELECTRONIC PAYMENT SYSTEM FAILURE

Economists often oppose anti-gouging laws, which limit price increases in the wake of a disaster.⁵ Prices perform the important role of signaling which resources are scarce and which are plentiful,⁶ and anti-gouging laws stifle this signal. For example, when gasoline becomes more scarce, its price rises, giving consumers and producers information about its scarcity. This information serves to allocate the limited resource to those consumers who desire it the most and are willing to pay the highest price for it. Oil refineries respond to such information by increasing gasoline production to take advantage of the higher price. Refineries will build up their supply as some consumers forgo purchasing gasoline and come up with alternate methods of transportation. The increased supply will ultimately lead to lower prices. Thus, relative price changes communicate the relative scarcity of resources to consumers and producers.

When prices cannot communicate scarcity, consumers and producers lack the signals necessary to efficiently use resources.⁷ In the 1970s, for example, price controls held gasoline prices below market rates. As a result, consumers did not reduce their usage, resulting in gas shortages.⁸ Anti-gouging laws are a type of price control; they prevent prices from changing to reflect real scarcity.

In his article, Professor Rapp outlines this basic economic argument against anti-gouging laws, and then argues for several exceptions under which anti-gouging laws can lead to “hidden economic efficiency gains.”⁹ His first argument applies to situations of massive electronic payment system failure.

Professor Rapp argues that electronic payment processing systems are “extremely vulnerable” to short-term disruptions caused by “water damage to computer and telecommunications infrastructure and power outages.”¹⁰ During such a short-term disruption, people who value a product highly may not have access to the currency or electronic assets necessary to complete transactions.¹¹ Allocative inefficiency, a condition in which people who desire a good the most are not the ones who receive it, worsens as goods are channeled to those who happen to have currency on hand, instead of those who have the greatest desire for the goods.¹² For example, during a power outage, a person who has a strong

5. See Martha Musgrove, Editorial, *Free Market? It's Price-Gouging—and It Stinks!* MIAMI HERALD, Sept. 1, 1992, at 39A; see also Donald J. Boudreaux, *On Price Gouging*, THE FREEMAN, Apr. 2005, at 14.

6. F.A. Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519, 519–30 (1945).

7. See LUDWIG VON MISES, HUMAN ACTION 698–710 (1996/1949).

8. Hugh Rockoff, *Price Controls*, in THE CONCISE ENCYCLOPEDIA OF ECONOMICS II-43 (David R. Henderson ed., 2008).

9. Rapp, *supra* note 1, at 553 (stating that his contribution to the economic perspective identifies efficiencies from anti-gouging laws that other economists have yet to identify).

10. *Id.* at 554.

11. *Id.* at 554–55.

12. *Id.*

desire for ice in order to store penicillin may not have the currency needed to buy it. Instead, another individual who does have the currency will purchase the ice to keep his soda chilled. If both people had access to currency, then the first person would have been willing to pay more for the ice. However, the shortage of currency meant that the second person received the ice, so allocative inefficiency occurs.

Negative externalities arise when an uninvolved party is adversely affected by someone's actions. Professor Rapp argues that negative externalities arise from underconsumption of toiletries and disinfectants due to a shortage of currency caused by massive payment system failure.¹³ This underconsumption spreads disease.¹⁴ When "[c]onsumers who forego [sic] gasoline and the vehicular mobility it facilitates... remain in crowded, unstable environments, [it leads] to violent tinderboxes."¹⁵ In these cases, the underconsumption of certain goods has negative effects on people who are not involved in the consumption choices made.

Professor Rapp asserts further that "consumers may be operating under imperfect information (or irrationality) in post-disaster settings" that will prevent markets from working efficiently.¹⁶ "By creating disincentives for prompt price inflation," he argues, anti-gouging laws "may give consumers time to make intelligent choices and to obtain products with their limited hard currency assets before those currency reserves run out."¹⁷ By keeping prices low, he argues, uninformed and irrational people will not spend all of their currency.¹⁸

Professor Rapp's arguments are subject to several criticisms. First, and most importantly, if the goal is to ensure that those who most desire goods are the ones who receive them, then price gouging by sellers is actually desirable. The reason for this is somewhat unintuitive but relies on a standard economic concept: elasticity.¹⁹

Elasticity is a measure of how responsive a person is to a change in a good's price. Elasticity of demand measures the percentage change in the quantity of a good demanded in response to a percentage change in that good's price. If the percentage change in the quantity demanded is greater than the percentage change in price, then the demand is *elastic*. If the percentage change in the quantity demanded is less than the percentage change in price, then the demand is *inelastic*. In short, inelastic demand means that consumers are relatively unresponsive to price changes; elastic demand means that consumers are more responsive to price changes.

13. *Id.* at 555.

14. *Id.*

15. *Id.*

16. *Id.*

17. *Id.*

18. *Id.*

19. WALTER NICHOLSON, MICROECONOMIC THEORY: BASIC PRINCIPLES AND EXTENSIONS 499 (South-Western Thomson Learning 8th ed. 2002).

A relationship exists between an individual's elasticity of demand for a good and his total expenditure on that good. Total expenditure on a good is the number of units purchased multiplied by the per-unit price. One's elasticity of demand affects total expenditure because it measures the change in the number of units demanded based on a change in price. When an individual has elastic demand, a rise in price will lead to a greater than proportional fall in the quantity of units demanded (i.e., the percentage change in price is less than the percentage change in quantity). As a result, total expenditure will fall. On the other hand, if an individual has inelastic demand, the quantity of units demanded will fall less proportionally than a price rise (i.e., the percentage change in price is greater than the percentage change in quantity). Total expenditure will rise. In sum, an individual's demand elasticity will determine whether a change in price causes total expenditure to increase or decrease.

An individual's elasticity of demand depends on the price of the good. At low prices, a person will have inelastic (relatively unresponsive) demand for that good, whereas at high prices, a person will have elastic (relatively responsive) demand. If price was set at a level where the consumer had inelastic demand, total expenditure would increase when the price increases because the quantity demanded would fall less than proportionally to the price rises. A profit-maximizing seller could, therefore, increase revenue by increasing the price. Sellers will continue to raise the price until it is set in the elastic portion of the demand curve. Thus, sellers will never set a price at a level where an individual has *inelastic* demand.

How does this affect allocative efficiency? Professor Rapp argues that anti-gouging laws will keep prices low, which will keep total expenditure low and, thus, limit the extent of allocative inefficiency. Since businesses will never set prices in the inelastic range of the demand curve, the quantity demanded will fall more than proportionally to a price rise. As a result, total expenditure will decrease when price rises.²⁰ An anti-gouging law, however, will keep prices low and increase total expenditure relative to a price rise.²¹ Anti-gouging laws

20. Under specific conditions, such as linear demand and zero marginal costs, price can potentially be on the unit elastic point of the demand curve, which means that there would be a proportional change in quantity from a change in price. In such a case, total expenditure will not change from a rise in price. Realistically, however, marginal costs are not zero, meaning that price is set in the elastic part of the demand curve.

21. Mathematically, this conclusion can be proved by examining how total expenditure changes after a change in price (P) and quantity (Q):

$$\begin{aligned}
 TE &= P \times Q \\
 \frac{\partial PQ}{\partial P} &= Q + P \times \frac{\partial Q}{\partial P} \\
 \text{Dividing both sides by } Q, & \\
 \frac{\partial PQ / \partial P}{Q} &= 1 + \frac{\partial Q}{\partial P} \times \frac{P}{Q} \\
 &= 1 + e_{Q,P}
 \end{aligned}$$

lead to the use of more currency by those who have it, which, according to Professor Rapp, leads to greater allocative inefficiency than if the price had risen. Because higher prices reduce allocative inefficiency, Professor Rapp should be in favor of laws that *prohibit* keeping prices low.

Even if a shortage of readily accessible hard currency occurs, the additional constraint of price controls can only worsen allocative efficiency. Prices are an allocation mechanism. Preventing prices from allocating resources makes the market less efficient, even among liquidity-constrained consumers. That is, even if some people have limited access to currency, inefficiency will nevertheless occur through the prevention of price allocation among those people having the requisite currency. Thus, the ability for higher prices to reduce allocative inefficiency among liquidity-constrained consumers undermines a primary benefit Professor Rapp attributes to anti-gouging laws.

Professor Rapp also makes several other arguments supporting the use of anti-gouging laws. The remainder of this section examines these reasons.

The negative externalities that Professor Rapp mentions—those stemming from the underconsumption of toiletries, disinfectants, and gasoline—arise from a shortage of goods, not from a shortage of currency. Even if one accepts his conclusion that a shortage of currency results in allocative inefficiency, this does not imply that those who purchased disinfectants and toiletries are using them ineffectively. Rather, the root of the problem is simply that not enough disinfectants and toiletries are available. Sellers have an incentive to supply greater quantities when the price rises, but anti-gouging laws prevent this.

Finally, Professor Rapp argues that market efficiency will diminish when consumers are “operating under imperfect information (or irrationality) in post-disaster settings.”²² Economic theory, however, shows that perfect information is only one of the *sufficient* conditions for market equilibrium; it is not a *necessary* condition.²³ Economists also have shown empirically that people with imperfect information can achieve market efficiency.²⁴ Indeed, imperfect information is normal. To argue that markets only work with perfect information is to argue that markets never work. More fundamentally, Professor Rapp’s argument that lower prices will allow uninformed consumers to maintain cash balances is incorrect. As shown above, anti-gouging laws will cause total expenditure to increase relative to a rise in price.

Price elasticity of demand, by definition, is inelastic when $e_{Q,P} > -1$ and elastic when $e_{Q,P} < -1$. Q is always positive when goods are sold, so the sign of $\partial PQ/\partial P$, which is dependent on $e_{Q,P}$, will determine whether total expenditure increases or decreases. Because a profit-maximizing firm will never set price in an inelastic portion of the demand curve, price and total expenditure will move in *opposite* directions.

22. Rapp, *supra* note 1, at 555.

23. VERNON L. SMITH, RATIONALITY IN ECONOMICS: CONSTRUCTIVIST AND ECOLOGICAL FORMS 61–62 (2008).

24. See Vernon L. Smith, *Markets as Economizers of Information: Experimental Examination of the “Hayek Hypothesis,”* 20 *ECON. INQUIRY* 165, 177 (1982); see also Dhananjay K. Gode & Shyam Sunder, *Allocative Efficiency of Markets with Zero-Intelligence Traders: Market as a Partial Substitute for Individual Rationality*, 101 *J. POL. ECON.* 119, 134–35 (1993).

Professor Rapp makes four recommendations based on his analysis: anti-gouging laws should (1) be geographically constrained to the disaster area, (2) only apply where destruction is widespread, (3) have strict time limits, and (4) not apply to all producers but instead focus on suppliers of goods that are most likely to be in high demand and that alleviate negative externalities.²⁵

I agree with Professor Rapp's recommendations to the extent that they reduce the application of existing anti-gouging laws. Given Professor Rapp's goal of limiting allocative inefficiency, however, the extent to which anti-gouging laws still apply will, by keeping prices low, lead to precisely the opposite of his desired result. Furthermore, if people think that the price of a good will rise in the future, then the price for that good today is relatively cheaper, and people will demand more of it. By advocating a time limit on activation, these laws will increase the current demand for goods, which Professor Rapp argues will be inefficient due to the shortage of currency. While negative externalities and increased transaction costs are unfortunate, given that they exist,²⁶ an anti-gouging law will exacerbate rather than alleviate difficulties.

III. BEHAVIORAL ECONOMICS AND PRODUCT MARKET INEFFICIENCY

Professor Rapp's second justification for anti-gouging laws employs arguments about economists' behavioral assumptions about people.²⁷ Traditional economic models assume that people's choices will respond to changes in relative prices and that these responses will take place in a timely fashion. Behavioral economics, on the other hand, relaxes assumptions about individuals' responsiveness to price changes. Using two concepts from the latter approach, Professor Rapp argues that sellers' use of the "availability" and "anchoring" heuristics makes prices unresponsive to changing conditions.²⁸ As a result, markets can become more efficient when anti-gouging laws force sellers to keep prices low.²⁹

A. Availability Heuristic

The availability heuristic, Professor Rapp argues, occurs when people are led "to seemingly irrational behavior because [they] overestimate the probability of an event if they have witnessed that event."³⁰ The result, according to Professor Rapp, is the following:

In post-disaster markets, the availability heuristic may lead to higher price hikes than supply shocks and increased demand would require. Suppliers in affected areas—having witnessed the destructive force of a natural disaster or terrorist attack

25. Rapp, *supra* note 1, at 555–57.

26. I respectfully question empirically how often massive payment system failure occurs compared to the total number of events for which anti-gouging laws apply.

27. Rapp, *supra* note 1, at 557–59.

28. *Id.*

29. *Id.* at 557–58.

30. *Id.* at 557.

and experienced first hand the difficulty of conducting “business as usual”—may *overestimate* the market impact of the relevant event. Fearing widespread supply outages and future difficulties, suppliers may increase prices beyond the market equilibrium.³¹

Under this theory, anti-gouging laws would then play a role in preventing sellers’ overestimation of price increases.

Professor Rapp is correct to question the rationality of people in the wake of natural disasters. Obviously these traumatic events are likely to disturb “business as usual.” However, Professor Rapp’s analysis mischaracterizes the market as a static environment. Especially in times of crisis, the market is a dynamic process of discovery. The equilibrium price arises only after a trial-and-error process through the feedback mechanism of the market. The nature of the market means that society cannot know the outcome without allowing the process to actually play itself out.³²

The final, optimal price is unknown to all participants before actually engaging in market exchanges. One role of prices is to *disseminate* information to market participants. Another equally important aspect is that flexible prices allow entrepreneurs to *discover* new information. Higher prices communicate a need, but they also spur entrepreneurial efforts to find new and better ways to satisfy those needs. By removing the possibility of overestimation, anti-gouging laws simultaneously remove the forces that disseminate information, encourage innovation, and eventually drive prices to the equilibrium level.

Even if we knew what the future equilibrium price would be, a below-equilibrium price may be more inefficient than an above-equilibrium price in the present. Professor Rapp argues that an inefficiently low price is preferable because “as supply expands and demand retracts in the weeks after a disaster, that pricing level may be the more optimal level over a medium-run view than what a sticky market would have yielded.”³³ Shifts in supply and demand, however, do not occur spontaneously. Demand will retract when people satisfy their need for disaster-related goods, and supply will shift when new sellers enter the market. By keeping prices below the equilibrium level, anti-gouging laws promote buying and lead to shortages, which in turn prevent satisfaction of disaster-related wants. Prices set below equilibrium also diminish incentives for new sellers to enter the market. When the feedback mechanism of market prices is disabled, these supply and demand shifts are less likely to occur, which delays recovery.

B. *Anchoring Heuristic*

Professor Rapp’s final justification for anti-gouging laws is the use of “anchoring” heuristics by sellers. He defines anchoring as “the process by which

31. *Id.* at 557–58.

32. ISRAEL M. KIRZNER, *The Perils of Regulation: A Market-Process Approach*, in *DISCOVERY AND THE CAPITALIST PROCESS* 119, 131 (1985); see also F.A. Hayek, *Competition as a Discovery Procedure*, in *NEW STUDIES IN PHILOSOPHY, POLITICS, ECONOMICS AND THE HISTORY OF IDEAS* (1978).

33. Rapp, *supra* note 1, at 558.

an individual attaches a particular value to an item because the value is 'available' or 'strongly present in the mind.'³⁴ Due to this, he argues, even after sellers realize that they have overreacted (due to availability bias), they will not lower prices. Furthermore, because all sellers are subject to these biases, the market price will remain inefficiently high.³⁵ Professor Rapp rejects the argument that sellers will identify this profit opportunity and lower prices.³⁶

A fundamental weakness underlying Professor Rapp's argument is that potential sellers from other geographic locations are not subject to the availability and anchoring biases, at least not to the same extent. Anti-gouging laws will deter these sellers from making profits by bringing in supplies from unaffected areas. For example, after Hurricane Ivan ravaged Florida in 2004, John Charles Mikell and John Tate Mikell drove more than 300 miles to sell much-needed gas generators in disaster areas.³⁷ Upon arrival, however, investigators from the attorney general's office stopped them.³⁸ They were charged with violating Florida's anti-gouging law.³⁹ If availability and anchoring biases are present, we especially want entrepreneurial endeavors like these to be encouraged, not outlawed.

These behavioral assumptions lead Professor Rapp to reaffirm his previous recommendations, with one exception. He argues that the availability and anchoring heuristics will affect sellers more strongly near the disaster area and gradually decline the further away the sellers are located.⁴⁰ Thus, anti-gouging laws should be more vigorously enforced the closer one gets to the affected area.⁴¹ However, if behavioral heuristics bias sellers' actions significantly, then clear profit and loss signals will help overcome the use of inefficient heuristics. Allowing prices to rise in the areas closest to a disaster is especially important in this scenario. Price increases will signal to other sellers where goods are most urgently needed and create the competitive pressures necessary to overcome behavioral biases.

IV. RECOMMENDATIONS

Many states' primary purpose in enacting price-gouging legislation is to prohibit sellers from taking "unfair" advantage of consumers.⁴² Anti-gouging

34. *Id.*

35. *Id.*

36. *Id.*

37. Press Release, Office of the Attorney Gen. of Fla., Attorney General Charges Three More Businesses with Price Gouging (Sept. 29, 2004), available at http://myfloridalegal.com/_852562220065EE67.nsf/0/D2FEB2EE9801D69B85256F1E0064B9AE?Open&Highlight=0,mikell (noting that the Mikells live hundreds of miles away from the disaster area) (on file with the *Public Contract Law Journal*).

38. *Id.*

39. *Id.*

40. Rapp, *supra* note 1, at 559.

41. *Id.*

42. See ARK. CODE ANN. § 4-88-301 (West 2007) ("The General Assembly hereby finds that during emergencies and major disasters...some merchants have taken unfair advantage of

laws require broad scope and liberal interpretation to cover various contingencies in the face of the unpredictable and unexpected nature of disasters.⁴³ In an effort to cover the many important goods and different regions that could be affected, states tend to construct laws that are overly inclusive.⁴⁴

I propose a different interpretation of which actions constitute taking “unfair” advantage of consumers. Two types of “unfair” treatment are associated with natural disasters. First, higher prices as a result of the arbitrary occurrence of a natural disaster in a particular locale can be seen as “unfair” where citizens elsewhere are not subject to price increases. Second, a seller who uses heightened fear about supply scarcity because of a recent disaster to engage in fraudulent activities, make misrepresentations, or otherwise take advantage of consumers results in “unfair” treatment. Higher prices arise under the first scenario because of changes in real factors and, as argued above, lead to beneficial consequences. Higher prices associated with the latter scenario, however, necessitate judicial or legislative intervention.

Professor Rapp states that common law doctrines such as unconscionability and the duty of good faith and fair dealing will probably not be effective in restraining post-disaster price increases.⁴⁵ However, he makes this conclusion in reference to the laws’ ability to restrict the price increases caused by the “arbitrary unfairness” of a natural disaster’s occurrence.

Professor Rapp is correct that the doctrine of unconscionability and the duty of good faith and fair dealing will not keep price low, but they will deter sellers from using fraud or misrepresentation to take unfair advantage of consumers, yet still allow prices to rise in response to the very real, albeit “unfair” conditions the disaster has caused and, in doing so, communicate information and create socially beneficial incentives.

V. CONCLUSIONS

Professor Rapp’s article is an excellent survey of anti-gouging laws and the economic case against them. However, his own economic justifications for anti-gouging laws are not compelling. Anti-gouging laws exacerbate allocative inefficiency and, if biased behavioral heuristics are significant, prevent prices from motivating sellers to increase supply. They prevent market prices from communicating scarcities and aligning incentives. When evading these laws, buyers and sellers often waste resources by conducting exchanges in

consumers by greatly increasing prices...”; *see also* CAL. PENAL CODE § 396 (West 2007); N.J. STAT. ANN. § 56:8-107 (West 2007); N.Y. GEN. BUS. LAW § 396-r (McKinney 2007); 73 PA. STAT. ANN. § 232.2 (West 2007); W. VA. CODE ANN. § 46A-6J-1 (West 2007).

43. *See* CAL. PENAL CODE § 396 (“[I]t is the intent of the Legislature that this section be liberally construed so that its beneficial purposes may be served.”); *see also* TENN. CODE ANN. § 47-18-5101 (West 2007); W. VA. CODE ANN. § 46A-6J-1.

44. For example, many states have laws that restrict prices on all goods, including those that are unrelated to the disaster.

45. Rapp, *supra* note 1, at 541.

inefficient ways,⁴⁶ such as waiting in lines, conducting black-market transactions, and purchasing from less-efficient sellers.⁴⁷

Natural disasters destroy wealth; there is no reason for anti-gouging laws to compound this. Accordingly, judicial and legislative intervention should focus specifically on deterring activities of fraud and misrepresentation, rather than on price increases in general.

46. *Id.* at 551.

47. After Hurricane Wilma in 2005, “instant entrepreneurs” in Little Haiti flouted anti-gouging laws and sold gasoline on the side of the street in empty buckets, milk bottles, and even pickle jars. Abhi Raghunathan, *South Florida Shortages Fuel Black Market*, ST. PETERSBURG TIMES, Oct. 29, 2005, at 4B.