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Public Misunderstanding as a Market Imperfection**

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Surge Pricing and Price Gouging: Public Misunderstanding as a Market Imperfection

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Abstract:

This paper evaluates the economic and ethical effects of sudden excess demand for goods or services. The normal market response of “surge prices” or “price gouging” invokes sharp negative reactions by consumers who consider the profit seeking market response to be unethical. Public condemnation often prevents merchants from following market signals, or induces governments to intervene by implementing price ceilings. This paper argues that public misunderstanding preventing efficient and fair outcomes is the true market imperfection in these cases. The paper provides reasons for the public misunderstanding and suggests that demonstration effects would be the most effective way to induce more favorable market outcomes.

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1. Introduction

In December 2014, as a gunman held café patrons hostage in Sydney Australia and the central business district was evacuated by police, the Uber taxi service automatically implemented surge pricing.¹ Residents reacted with outrage at the company's insensitivity until the company quickly responded by offering free rides in the city until the emergency subsided.

In other less critical times, Uber's surge pricing goes into effect whenever you would normally expect to observe a shortage of traditional cabs; on New Year's eve, after fireworks displays, and during rainstorms. In those instances, Uber customers are often quick to complain about the high prices on social media sites like Facebook, Twitter and Instagram.²

Other naturally occurring emergencies such as snowstorms, hurricanes, and earthquakes also cause sudden severe shortages of goods and services. Merchants in these areas are sometimes inclined to raise prices even before the disaster strikes in response to a surge in precautionary demands for gasoline, snow shovels, hotel rooms and many other items. Customers usually call these actions price gouging and decry the callousness and insensitivity of profiteering merchants.³ Public condemnation has previously been so

¹ A surge situation arises whenever there is a sudden and significant increase in demand and/or decrease in supply of a product to a market. Surge pricing occurs when a company responds to the excess demand by increasing the price in order to again equalize market demand with available market supply.

² <http://www.today.com/money/163-uber-twitter-explodes-after-pricey-new-years-eve-1D80396181>

³ Kahneman, Knetsch and Thaler (1986) report that 82% of survey respondents say that raising the price of a snow shovel when a snowstorm is approaching is unfair.

strong that 34 US states and the District of Columbia have implemented price gouging legislation prohibiting unconscionable price increases in emergency situations.⁴

In contrast to public opinion, supporters of surge pricing in these circumstances, which includes Uber and many economists, contend that in a free competitive market, if product prices rise to equalize supply and demand, goods and services will thereby be allocated in a more efficient manner.⁵ Economic efficiency means that the available supply is allocated to the most valuable uses first and to lower valued uses later.⁶ This is a remarkable result especially when one recognizes that it is the pursuit of profit by firms and utility by consumers rather than any central direction or control that can generate this favorable outcome. Indeed, it is the well-known idea at the heart of Adam Smith's invisible hand.⁷

However, the effectiveness of the market price mechanism to allocate goods and services to those with the greatest need also depends on the willingness of the market participants to accept the mechanism. If people believe that surge pricing is unfair and act on that belief by encouraging legislators to put into place price controls, or by shaming company pricing practices until their reputation is tarnished, then the market will cease to function efficiently.⁸ Herein lies the policy dilemma, namely, should ethical concerns about

⁴ There are numerous online stories written after emergencies decrying the tendency for merchants to raise prices. See for example, <http://www.cbc.ca/news/canada/montreal/uber-price-surge-new-ears-montreal-1.3395623>

⁵ Uber's description of their surge pricing policy: "What is Surge Pricing?" Uber, 2015. <https://help.uber.com/h/6c8065cf-5535-4a8b-9940-d292ffdce119>

⁶ See Brewer (2006), Zwolinski (2008).

⁷ There are numerous online stories after emergencies episodes supporting price gouging including: <http://www.cnbc.com/id/49622944>, <http://abcnews.go.com/2020/Stossel/story?id=1954352&page=1>

⁸ See Kahneman, Knetsch and Thaler (1986).

fair market behavior override the market mechanism in these circumstances? Should politicians listen to the general public, or to economists?

In this paper I will evaluate the implications of the two alternative policies and argue that the free market response dominates in almost every respect. Almost everyone affected by the emergency can be shown to be better off with the surge pricing/free market response. This result has been explained in many university classrooms, in academic papers, and in many news magazine accounts. Despite these previous explanations though, most people remain soundly against the free market in these situations.⁹ Why? The second part of the paper will provide some rationales for the public condemnation of surge pricing and price gouging behavior. The general public is not stupid when they decry the free market in these situation, however I will suggest they have incomplete information and are led astray by market confusions that have not been adequately emphasized by economic teachings. Finally, I will suggest several methods to inspire a transition to a surge pricing/free market response in emergencies. Afterall, if the general public does not believe in the free market response, then even if it is best for them, the policy will not materialize. Since it is unlikely most of the public will read this paper and be convinced, a more practical method for disseminating information is proposed.

2. In Support of the Free Market

2.1 Surge Pricing

Consider a surge pricing situation. The price of Uber's taxi services will rise automatically in response to a surge in demand as when a 4th of July fireworks show ends

⁹ See for example Munger's (2007) account of consumers reacting to price gouging after a hurricane in North Carolina.

or when a sudden rainstorm hits a city. When the demand surge is unexpected, demand will greatly outstrip supply unless the price is also increased. The high price serves to reduce demand substantially as those unwilling to pay for a quick trip to their destination look to the next best alternative. In addition, the price increase will act to bring more drivers into the area who are attracted by the higher rewards. The more rapidly new drivers respond, the faster the prices will fall back to normal levels. With surge pricing in place those who are most in need, and thus those most willing to pay more, receive a ride quickly with very little waiting time while those who are priced out of the market move on to other modes of transportation or wait until later.

In contrast, when surge pricing is not in effect, the sudden excess demand remains high while supply remains at its normal level. The outcome will be a substantial amount of unsatisfied demand in the form of greatly increased wait times.¹⁰ In this case, the allocation of rides will be random. The most significant cost will be to those who desperately need the service quickly, let's imagine because they just learned their child is sick at home, but who will have to wait a long time for a ride. At the same time many other lucky riders may have little urgency to get somewhere but instead will be randomly chosen to get a ride quickly. This is the nature of the unseen inefficiency; rides are ordered randomly without surge pricing in place, not on the basis of greatest to least need.

A second unseen inefficiency is that total cumulative waiting times will be longer without surge pricing because new suppliers will not be attracted to the market. With or without surge pricing in place most consumers will wait longer. However, the mechanism

¹⁰ For evidence of increased wait times when surge pricing is not in place see Hall, Kendrick, and Nosko (2015).

will be different. Without surge pricing, consumers will call for a ride and will wait an uncertain amount of time before their service arrives. With surge pricing most consumers without urgent demand will wait for the prices to go down before hailing the service. What cannot be seen though is that the total wait time across all consumers will be higher without surge pricing.

2.2 Price Surges in Emergencies

Consider next the free market response to an impending emergency, such as an approaching hurricane or snowstorm and the effect on the market for a critical product such as gasoline, an important product for both businesses and consumers. Gasoline demand will begin to rise even before the event as individuals begin to hoard as a precaution against disrupted future supply. At the same time gas suppliers will recognize that the future delivery will likely be delayed.

Profit seeking and uncertain merchants would choose to price dynamically in this situation, which implies seeking a price so that depletion of the product proceeds at a pace such that supply runs out just as the next shipment arrives. However, because there is great uncertainty about both how much extra demand there will be and when the next product shipment will arrive, merchants are likely to change the price regularly (dynamically) in response to changes in depletion rates and as new information changes the expectations of future resupply. When depletion rises too fast the merchant raises the price to slow sales and when depletion slows too much the merchant lowers the price.

When all merchants competing with each other price this way, there will likely be a high variance in prices since each merchant will have different expectations and different

initial conditions. For example, if a gas station that is running low on supply learns that the shipment due soon will instead be delayed another day, the merchant may raise its price well above the competition to slow depletion considerably. In contrast, a gas station that has recently received a new shipment may charge a lower price than the competition as they allow for a more rapid depletion rate.

As the price rises, several things will happen. First, higher prices will reduce demand and virtually eliminate the precautionary demand. Lines of people waiting to buy the products will almost disappear. It is the fear of not having enough gas that leads to the precautionary demand and the long lines; with dynamic pricing consumer fear is replaced by consumer annoyance because they are unwilling to pay the higher price. The only consumers who will purchase the product will be those with immediate needs and whose economic need for the product exceeds the higher price per unit. Second, the merchants will make a greater profit on per unit sales. However, for some merchants this may only be enough to maintain total revenue in the face of declining sales volume. Thus, although they may make considerably more profit per unit of the goods sold, because they will also sell fewer goods in subsequent days their total revenue may not rise very much.

Perhaps the most important aspect of dynamic pricing though is that long lines are unlikely to form. Merchants with very low initial supplies will raise their prices well above the competition but these prices will guarantee that there is always some product available with no waiting if one is willing to pay the higher price. No lines will also mean that average citizens need not worry that the product will run out; they need only worry that the prices will be too high to invite purchase. Also the immediate high prices will

discourage most of the hoarding since the opportunity cost of doing so will be extremely high.

The third effect of the much higher prices will be to signal holders of the product in nearby areas that there is a profit opportunity if one can move new supplies into the affected areas quickly. These are the individuals who will make the greatest pure profit from the situation since they will sell similar quantities but at higher prices. However, they are also the ones whose actions will reduce the length of the emergency.

Rational market participants will recognize that the high price situation is temporary. Eventually the storms will pass, the supply chains will be reestablished and the prices will be lower. Thus, the merchants who are first to act and quickest to move new supplies into the area will also be the ones who profit the most.

This outcome will be efficient because the critical scarce resources will be allocated via the price mechanism in the order of greatest to least need. Only the consumers who independently judge that they will lose more by not purchasing the high priced products will buy the high priced goods. The others will wait until the price falls to a level for which it is in their economic interest to jump in. Some observers may believe that only wealthy consumers will pay the high prices but this is not likely because even many less wealthy consumers may lose valuable income if they cannot gain access to some of the scarce resources. Also, wealthy individuals will be just as likely to economize on their purchases as others since they too will recognize that products are always available for sale and that the prices will fall to normal levels in the near future.

2.3 Price Controls

Now compare the outcome above to the constrained situation when prices do not increase substantially. When prices are maintained at the normal levels in the face of expected shortages consumers will begin to stock up on supplies. For goods, this will mean rapid depletion of essential foods from store shelves and lines forming at places like gas stations. The desire to hoard will ripple through the community as no one will want to be left without.^{11, 12}

To prevent excessive hoarding from occurring, merchants will often place limits on the amount of a product that can be purchased, for example 10 gallons of gasoline per customer. The consumers who react early enough will have supplies to last through some stages of the emergency but those who do not act quickly may discover that supplies have run out. Products will be misallocated both because each consumer will be allowed an equal amount and the ultimate needs will not be equal and because purchases are made before the consumers know to what extent they will personally be affected by the emergency.

After the emergency event occurs, demand for products will remain high and long lines may form for items that are most in need. Lines at gas stations, for example, mean that individuals will pay a higher price for fuel, but it will come in the form of time waiting rather than in monetary terms. Lines of people waiting to purchase a good at the normal price means these people are not attending to other matters that may not require fuel and

¹¹ There is good evidence on this in the day before a predicted snowstorm in many US regions in which snowfalls are irregular. Entire supplies of milk, eggs and bread are often bought even when it is known the storms effects may last no more than a day or two.

¹² This news article provides a good account of the panic buying, hording and time wasted when prices do not rise and supplies run out. <http://www.washingtonpost.com/wp-dyn/content/article/2008/09/25/AR2008092504159.html>

thus are incurring an opportunity cost.¹³ For example, not cleaning out a basement while waiting to get fuel for a chain saw, or, not driving a delivery truck with emergency supplies while waiting to get the fuel to make it possible. Also the equal quantity constraints on the most needed products like gasoline will mean that everyone who is lucky to buy gas will be presumed to have an equal need. Thus someone who only needs a few gallons to get by will surely buy up to the constraint to satisfy their precautionary demand. Others who have need for much more than the limit, because perhaps they are driving emergency vehicles all day, will purchase the limit but will be forced into another line once it runs out. Without the price system to allocate on the basis of greatest needs some consumers with great need will not get the products while others with much lesser need will. Indeed, the allocation system that arises in an emergency with no price increases is mostly random because it is based on the luck of waiting in line. Some will obtain a product quickly because they are lucky to be at the front of the line, others will wait a long time, while still others will wait only to be turned away when supply runs out.

Another way to see the differences between the two allocation methods is to look only at the final effects. In the case of free market pricing, scarce products in great demand in the emergency are allocated to individuals and business in the order of greatest to least immediate need. The need is judged, not by some independent party, but by the businesses and consumers themselves. Thus first responder emergency vehicles and workers and consumers whose emergencies are the greatest will get the products first whereas others whose needs are less critical will wait. Furthermore, under the free market prices, profit-

¹³ See Deacon and Sonstelie (1989).

seeking individuals will quickly divert products into the affected area thereby reducing the duration of the emergency.

In contrast, under the alternative mechanism in which prices do not rise, scarce products are allocated randomly to individuals and businesses on the basis of first to last in line. Everyone's need is judged to be equal and thus those who receive the product each get the same amount. The duration of the emergency is extended for two reasons. First because individuals spend considerable amounts of time waiting in lines to obtain a share of the scarce goods, thus incurring an opportunity cost¹⁴, and second because fewer supplies from outside the region will be diverted to help those in need. Some charitable responses will occur, but these will quite likely be much less than the supplies made available by self-interested merchants.

This comparison suggests that the main effect of imposing "fairness" or "ethics" in this situation and thus preventing the free market response is to prolong and worsen the emergency situation for almost everyone involved. Very few people do better in the constrained price outcome. Those that do fair better, do so out of sheer luck.

3. The Sources of the Public Misunderstanding

In anti-price gouging laws, the use of the word "unconscionable" accurately describes the sentiment of most observers to the prohibited price increases. Most consumers express moral outrage accusing merchants of profiteering off the backs of the vulnerable. Because of the strong negative reaction, even the merchants themselves are

¹⁴ Waiting in line to obtain a scarce resource means not doing other cleanup tasks that do not require the resource. For example, a person facing a high gas price might attend to other tasks instead. Waiting in line to obtain the good will put off this work till a later time.

reluctant to raise prices because it seems wrong.¹⁵ Thus many see this behavior as a clear example of free market failure. Even legislators who are free market proponents will often support regulations against price gouging and surge pricing.¹⁶

One reason for the resistance may be that there is a principled ethical or moral justification against free market behavior in these circumstances. Some have argued that despite the consequences of allowing high prices in an emergency, the behavior is just inherently wrong. Sullivan (2014) argues that surge pricing feels wrong because we wish we lived in a world where people would charitably go out of their way to help others in an emergency. Snyder (2009) uses a deontological explanation suggesting that merchants have a duty of beneficence to maintain usual prices and not to take advantage of consumers in distress.

Sandel (2009) suggests the following about price gouging, “Greed is a vice, a bad way of being, especially when it makes people oblivious to the suffering of others. More than a personal vice, it is at odds with civic virtue. In times of trouble, a good society pulls together. Rather than press for maximum advantage, people look out for one another. A society in which people exploit their neighbors for financial gain in times of crisis is not a good society. Excessive greed is therefore a vice that a good society should discourage if it can.”

¹⁵ See <http://www.forbes.com/sites/harrycampbell/2015/08/05/would-uber-be-better-without-surge-pricing/2/>

¹⁶ For example Jeb Bush, http://www.ontheissues.org/2016/Jeb_Bush_Energy_+_Oil.htm and Chris Christie, <http://business.time.com/2012/11/02/post-sandy-price-gouging-economically-sound-ethically-dubious/>

In this section I will suggest several reasons why people are led astray by faulty logic. The first reason is because profiteering itself is generally held in low esteem by many people. Profiteering implies greed and greed is viewed as unethical, immoral or even sinful. The second reason is because the windfall profit comes from those who are suffering from an unexpected or emergency situation. It seems unfair to charge those in distress more than usual since that seems to only add to their burden. And finally, allowing high prices means that wealthy individuals can continue to purchase the scarce products but poorer individuals suffer more because many cannot afford the higher prices. It seems inequitable to most people if the wealthy have greater access to necessities than the poor. Let's consider each of these in turn.

3.1 Against Profiteers

The reason profiteering is held in low esteem is because it *is* bad in many circumstances. For example, if production or consumption is beset by externality effects, then profit seeking merchants may do great collateral damage to others; as when industrial plants pollute the air and water. Or, if markets have supply concentrated in the hands of only a few companies rather than being freely competitive, then income may also become concentrated in the hands of the profit seeking merchants thereby exacerbating income inequality. If market participants are not honest about the nature of their products or engage in any kind of coercion to force a transaction, then profiteering occurs while undermining the well being of the consumers. Recognition of these common market occurrences results in a general mistrust of self-interest as an appropriate motivator for

economic activity, so much so, that for some observers the pursuit of self-interest, or greed, in a market setting is perfunctorily condemned.

If greed leads to any of these common business practices then profiteering is worthy of condemnation because efficient markets will only arise when agents pursue their self interest while respecting property rights, fulfilling promises (contracts), providing accurate information to customers so they can make informed decisions, do not monopolize resources or supply in a market, and do not induce any externality effects upon the rest of the community. Violation of any of these constraints results in a market imperfection and thereby generates inefficient and unfair outcomes. It is appropriate to regulate any of these practices because self-interest alone will not sustain fair allocations and an efficient market.

In the case of profiteering in emergency situations, however, it is important to recognize that none of these market imperfection conditions apply, unless by chance they applied before the emergency as well. In other words, the sudden change in supply and demand conditions does not reduce competition; there are still numerous service stations, hotels and supermarkets competing against each other. The sudden change does not create any new externalities¹⁷ and it does not inspire deception or theft by traditional merchants.¹⁸

¹⁷ Rapp (2005) suggests a novel negative externality caused by disasters, namely the breakdown of area ATM machines reducing cash flow for consumers and businesses. This is unlikely to be a regular outcome in all emergencies situations though.

¹⁸ Emergencies do inspire entry by fraudsters attempting to profit from those in distress. For example, some will claim to be collecting money to help emergency victims when in fact they are not engaging in any such service. Greed that inspires this behavior is different from the self-interest that inspires traditional merchants to raise prices of scarce goods. When a service station owner sells gasoline in an emergency, the consumer is receiving precisely what is expected, albeit at a higher price; there is no deception.

Thus, profiteering by merchants selling scarce goods and services is not one of the circumstances in which markets fail. Instead, as shown above, this is one of the situations in which the market does a remarkably effective job in allocating the scarce goods fairly and helping to eliminate the shortage more quickly. In this case the market works just as is imagined in economic theory.

Thus, one important source of public misunderstanding is that people do not make the appropriate distinctions between fair and unfair profiteering. This is a mistake that Sandel (2009), quoted above, makes; believing incorrectly that all cases of profiteering are the same and worthy of condemnation, including the profiteering seen in emergency situations.¹⁹

3.2 Don't Add Insult to Injury

Significantly higher prices in emergencies seem especially egregious because the people who must pay the higher prices to the profiteering merchants are already suffering from the negative impacts of the emergency. It seems that the market adds insult to injury. In fact though, something very different happens. In these situations, the higher prices actually serve the people in the market by sending the appropriate signal of sudden scarcity. That signal forces consumers to self-assess whether their own need for the good is as high as the current price and inspires alternative suppliers in other regions to move products into the area. These responses are what help everyone by allocating the available supplies fairly from greatest to lowest need and by reducing the scarcity with new supplies.

Thus, while it may seem as though people are being injured even more with the high prices, it is keeping prices low that will increase the distress of the people in need. A

¹⁹ See Suranovic (2015) for a method of delineating “good greed” from “bad greed.”

shortage is occurring for reasons outside the control of the merchants or consumers. The shortage will necessitate that some people will have to go without a much-desired commodity or service for some period of time. The issue is how to allocate the available supply in a fair manner and how to eliminate the shortage as fast as possible. On both issues the free market does a better job overcoming the emergency than the more popular response.

The market response also enables more people to share in assisting others in the emergency, sometimes in very surprising ways. For example, when prices rise in the affected areas, profit-seeking merchants will shift supplies from unaffected areas to affected ones. In the unaffected areas this will reduce supplies somewhat and may cause increases in prices. In essence the people in nearby unaffected areas will help pay for the quicker resupply to the affected areas. If prices are not allowed to rise, then supplies are not shifted from nearby communities and thus the pain and suffering is concentrated more on the people suffering from the emergency.²⁰

The idea that by pursuing one's own best interest in a market one can simultaneously do good for others and that goods and services will be allocated to serve the greatest needs of the people without any sort of central direction or regulation is extremely counterintuitive. It is why the operation of the invisible hand is so remarkable when it does work. However, this result is only assured when certain assumptions are valid. The cases of surge pricing are perhaps the best examples of situations where the assumptions are indeed fulfilled. And yet, these are also the situations where the case for a free market is most often misunderstood.

²⁰ See Giberson (2011) for a good description of this phenomenon.

3.3 Protecting the Poor

Finally, we must consider the issue of equity across income classes in a shortage situation. One final complaint of the general public with regard to large price increases is that it serves the wealthy at the expense of the poor. Wealthy people can pay the high prices and will not suffer as much as poorer people. When one compares the situations carefully this turns out not to be completely accurate. First, with high prices the wealthy will be inclined to economize on their purchases just like everyone else. They will recognize that new supplies will quickly lower the prices in subsequent days and will buy only as much as needed each day. That will leave more to go around for others. Secondly, when price controls are in effect, the wealthy will often devise alternative ways to assure they receive the supplies they need, which only adds to extra precautionary demands. For example, when long lines form at gasoline stations, the wealthy have been known to hire multiple individuals to wait in gasoline lines to assure an adequate supply for themselves. This technique and others usually assure that the wealthy remain advantaged even when the prices remain low. Third, it is mistaken to think that poorer individuals are automatically better-off with lower prices. Keeping prices low results in considerable waiting times for rich and poor alike and limits the amount of goods one can purchase each time. For example consider a person who makes \$100 per day at a job but needs a full tank of gas each day to make working possible. If his usual daily cost for gas is \$30 then his net pay is just \$70. In the emergency, if the price of gas doubles then his net daily pay will fall to \$40 (\$100 - \$60), but he can still work and his earnings are still positive. In contrast, if the price is kept low in order to “benefit” him, he may spend half the day waiting in line only to get an insufficient amount of gas due to the quantity constraint and may not be able

to work for several days. In this case, he loses more money with the price control than he would with the price increase. Since new supplies will eliminate the shortage more rapidly, the total number of days with lower net income will be reduced as well. Note, that he will not be happy about paying \$60 a day for gasoline, but he will still be better off earning something rather than nothing each day.

Finally, consider the case of a demand surge for services such as for Uber taxis. In this case when surge pricing is in effect, it is true that more of the wealthy will receive the quick rides since they have the ability to pay more. However, for each of these higher priced rides, the lower income drivers will earn extra income coming directly from their wealthy customers. Thus, surge pricing facilitates an automatic redistribution from richer consumers to poorer Uber drivers. Furthermore without surge pricing in effect only those less wealthy individuals who are lucky enough to get the limited number of rides will benefit, while most other less wealthy individuals will be less lucky and will not benefit.

3.4 A Moral Duty

Let me return to the general argument in support of price controls to prevent profiteering; the idea that merchants have a duty to be beneficent especially in times of emergencies. This seems a reasonable compassionate response that we would wish people to have when other are in distress. However, it is based on the false impression that keeping the prices low in these situations is somehow helpful to others. As shown above though, lower prices will not eliminate the shortage but will instead extend the duration of the shortage. Lower prices will create lines for scarce goods and needless and costly waiting. Panic buying will guarantee that some portion of the highly needed goods and services will go to people with low needs while others who have high need will go without.

Lower prices will hurt both rich and poor but will likely hurt the poor more. Only a few random, lucky individuals will be helped by keeping prices lower.

It is puzzling then to support a duty that will make outcomes worse for almost everyone involved, allocate highly needed products on the basis of luck, inspire widespread panic and the hoarding of goods by those with lesser need, and extend the length of the emergency. A moral duty to do something should not rest on satisfying the analytical errors of the general public. It would be similar to arguing that doctors are morally bound to prescribe an antibiotic for a patient with a virus simply because patients mistakenly believe that antibiotics can be effective in these cases. Alternatively suppose we discontinue the allocation system for organ transplants like kidneys and hearts. Instead of allocating on the basis of greatest need (as prices would do in the markets we describe here) suppose the organs were allocated first-come, first-served leaving many with high need for an organ to die instead. Of course, the consequences of misallocating goods and services in emergencies are not as severe as misallocations of organs, but the principle is the same.

4. A Proposal for Change

In economics the theory of the second best suggests that when a market imperfection (or failure) of any sort is present there are often many ways in which policy intervention (taxes, subsidies or other regulations) can be implemented to improve economic efficiency.²¹ However, in choosing between policies, the first-best (or optimal) intervention is the one that is targeted most directly at the imperfection itself.

²¹ Lipsey and Lancaster (1956).

If one believes (incorrectly) that the imperfection in the market is the inappropriate pricing by merchants creating an unfair outcome, then one solution to overcome surge pricing concerns is for government to intervene by regulating the market. This has been accomplished by controlling prices in the taxi industry in many cities and by implementing price gouging laws. The regulated taxi solution imposes average cost and uniform pricing across drivers and across time to keep prices constant regardless of the supply and demand conditions.²² In the case of shortages in emergencies, government also does sometimes intervene to impose price gouging laws that limit the allowable price increases. Although both policies will assuage irritated consumers, they do so by imposing additional costs on everyone. In other words, to obtain a sense of justice everyone will suffer additional burdens and economic losses.

However, the true imperfection in the market is not unethical behavior on the part of the merchants charging high prices but rather is the imperfect information on the part of the general public about the effectiveness of the free market in these particular circumstances. This public misunderstanding inspires people both to react strongly and negatively against merchants who raise prices and to support price caps and price gouging legislation. This reaction results in a greatly inferior (efficiency is reduced) and unfair (products are randomly allocated to some with very low need) outcome.

The first best policy in these situations is simple to state but difficult to implement. If the source of the problem is the public misunderstanding of how the market works effectively in these situations, then the most direct solution is to change the public

²² Edward Gallick and David Sisk (1987) explain the historical justification for taxi price regulation in which drivers are required to charge a uniform price equal to the average cost of a trip.

understanding. But to accomplish this, many people would somehow need to recognize that those who seek to profit in a turbulent market environment actually provide a public service, despite the windfall gains they enjoy from those who are made vulnerable because of the emergency.

But how does one induce the public to change their attitudes? One method is better education in economics courses. Traditional textbooks do not adequately highlight the market failures associated with unethical behavior. They also do not emphasize how self-interest and profit seeking behavior works for the social good only when these ethical constraints are maintained. More comprehensive teaching of these ideas may encourage more people to understand the full consequences of the damaging government interventions in these cases. However, it seems unlikely that this could have much of an impact any time soon.

A second method is for the public to experience how things can work when the free market prevails in these types of situations. Uber's recent use of surge pricing in many markets is providing that experience to Uber users. If Uber is successful in its public relations campaign to explain the benefits of surge pricing then a new generation of people may learn why price increases can ameliorate market shortages more effectively. Other businesses have begun to use surge pricing including the airline and hotel industries where people have already learned to accept that prices will be higher at peak times and that discounts are available in periods of lower demand. Even Disney theme parks may soon

begin implementing surge pricing.²³ However, these consumer experiences are unlikely to carry over directly to attitudes towards pricing in more severe emergency situations.

In emergencies most people are unaware that the long lines and panic buying is caused by the reluctance of merchants to raise prices, which in turn is caused by public indignation at profiteering. One possibility then is for merchants in locations where price gouging is not yet illegal to agree to price to market but at the same time to soften the expected moral outrage by publicly announcing that all extra-normal profits will be donated to local emergency relief charities. This could enable dynamic pricing to prevail in an emergency and provide an opportunity for the general public to learn the effects through experience. For example, they will witness the disappearance of long lines, the elimination of the panic buying and the more rapid recovery time. Their anger at profiteering merchants will be assuaged by the merchants' public pronouncements of charitable giving.

Of course this solution creates a new problem. If merchants donate the extra profit to charity then they have less incentive to quickly redirect supplies to the emergency areas. Remember, it is the opportunity to make a greater profit that will inspire the rapid movement of replacement resources into the area. One way to partially resolve this issue is for merchants who are permanently located in the emergency area, and who would potentially suffer from the negative reputation effects of profiteering, to publically pledge their extra profit to charity. However, merchants who do not have a permanent presence and who move products into the area from outside might not make a similar pledge. This

²³ See <https://www.yahoo.com/travel/disney-considers-new-pricing-structure-1295103128952886.html>

allows for some of the resupply to take place by those who would not suffer from any negative reputation effects.

An ideal learning opportunity could be also created if two neighboring states that are likely to be hit simultaneously by the same emergency could take two approaches; one implementing price controls and the other encouraging the free market. For example North and South Carolina may one day be hit equally by the same hurricane. The one using the free market would need to run a public relations campaign beforehand to explain the experiment and perhaps also encourage merchants to publicly pledge some profit share to charities. If a disaster, such as a hurricane, strikes both states equally this would allow people to see for themselves how the two states' experiences compare. It would also enable researchers to measure the differences in the outcomes between the states and provide a more complete evaluation.

If these adjustments were made and if the general public witnesses the positive effects of free market allocation time after time in emergencies, then the public may eventually learn that markets can be effective in these situations. In time people may begin to accept that prices of scarce goods rise in emergencies. "Of course they rise" people will say. "it is not only natural for the prices to rise, it is also beneficial for all." Once public sentiment changes, merchants may recognize that they no longer need to pledge their profits to local charities, however, after some years of doing so, merchants may develop a charitable habit and continue with the practice nonetheless. Acting on self-interest in business does not mean that one can never be charitable towards others.

5. Conclusion

Free markets will work very effectively to allocate goods and services fairly, meaning in the order of highest to lowest need, when certain conditions or assumptions are fulfilled. Among these are the ethical assumptions underpinning all voluntary transactions including respect for property, and honest behavior. However, the market also requires one other critical thing to work effectively: it requires that market participants cooperate willingly in trade at the prices set by the merchants. When market conditions change suddenly such that either supply falls, demand rises, or both, then rational profit seeking merchants have good reason to increase the price, sometimes substantially. The market incentive to do so is higher profit. However, if consumers of products react adversely to the price increases and the profit making by expressing ill will and anger towards the merchants, or, if they petition government or intervene to protect them from the price increases, then public reaction will induce an inferior outcome in which virtually all market participants, with the exception of a few lucky ones, will be made worse off. In this case the market does have an imperfection but the imperfection that requires correcting is not the behavior of the profit seeking merchants but rather the public misunderstanding about the effectiveness of markets in these circumstances.

When consumers have a legitimate complaint about the functioning of a market, it makes sense to accommodate the desires of consumers by introducing regulations or controls. This makes sense when consumers despair because of negative externality effects as with a polluting industry. It also makes sense when consumers fret about high prices in a concentrated industry. However, in the particular circumstances discussed here, Uber's surge pricing and responses to natural disasters, the market imperfection is

the public misunderstanding about market effectiveness. In this case, the first best solution is to work to change public opinion.

Government can play a role here, but the role should be to help persuade people of the appropriateness of free markets in these circumstances. This is not a new phenomenon. For example, governments have often implemented public service campaigns to encourage people to act differently. Among these are public health campaigns to discourage smoking and drug usage, to wear seat belts and to avoid drinking and driving. Government can and should do the same in the case of surge pricing and price gouging at least in some locations so that public learning can occur. This paper suggests that the best way to convince a large number of people is through demonstration effects. Uber's surge pricing experiments set an example. If only one or two states could support the program described here in the case of emergencies, then citizens in those states and many others who watch from afar could learn how much more effective markets can be.

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