# G406: Business and Government
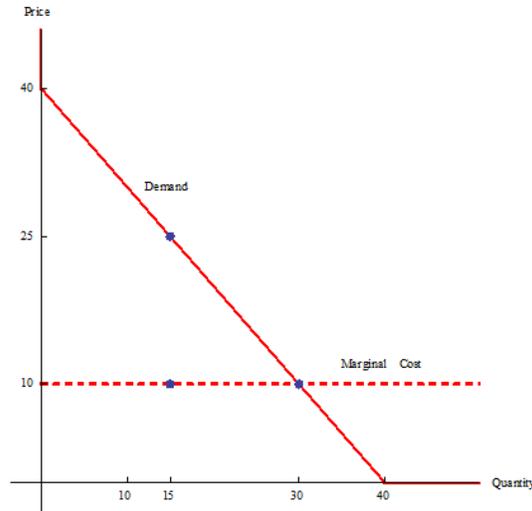
# PROBLEMS, Chapters 1, 2, and 3

*January 24, 2018*

1.1    Suppose the monopoly in the diagram below chose a price of 25.



(a) What would be the deadweight loss from allocative inefficiency?

(b) What would be the consumer surplus if the price were 10?

*(a) The deadweight loss is .5(25-10)(30-15) = .5(15)(15)= 112.5.*

*(b) The consumer surplus at a price of 10 would be .5(40-10)(30-0) = 450.*

1.2    In Shakespeare's play **The Merchant of Venice** Shylock says:

> "You'll ask me, why I rather choose to have
> A weight of carrion flesh than to receive
> Three thousand ducats: I'll not answer that:
> But, say, it is my humour: is it answer'd?
> What if my house be troubled with a rat
> And I be pleased to give ten thousand ducats
> To have it baned? What, are you answer'd yet?"

Is this consistent with the idea of surplus maximization? Explain.

*Yes. Shylock has his own tastes. He is willing to give up 3000 ducats to keep some carrion flesh. That is what maximizes his surplus. We cannot say that he is wrong, because we can't know that*

*he would get more happiness spending the money some other way.*
*Similarly, if he were willing to pay 10,000 ducats to get rid of rats*
*because he hates them so much, we cannot say he would be hap-*
*pier if he spent the money on beautiful paintings or trips to Greece*
*instead. De gustibus non est disputandum.*

1.3    Explain why the equilibrium price and quantity maximize total
surplus.

*At that price and quantity, every buyer who values the good more*
*than the price is able to purchase and every seller whose cost is less*
*is able to sell, so every possible trade that would create surplus does*
*happen. In the diagram below, you can see how at the equilibrium*
*price and quantity every potential buyer and seller that creates sur-*
*plus does. If any more units were sold, it would have to be with a*
*buyer who values the good at less than the cost to the seller.*
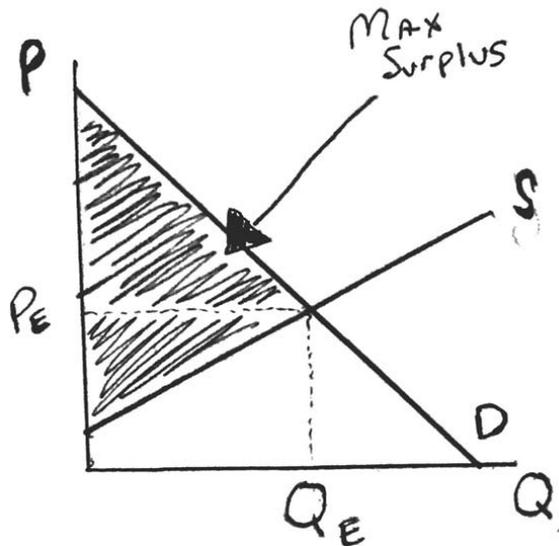


*Common mistakes:*

*A. The equilibrium maximizes surplus because surplus is highest*
*there. That is a tautology. The classic example of this is when*
*a doctor in Moliere's 17th century play, The Hypochondriac, says*
*something like, "Opium causes sleep in people because of its virtus*
*dormativa" (that is, its "sleep-inducing principle").*

*B. The equilibrium maximizes surplus because it is a stable out-*
*come. That is why it is the equilibrium, why it is what happens,*

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*but that does not explain why it maximizes surplus.*

*C. The equilibrium maximizes surplus because there is no dead-weight loss. That is another tautology, because deadweight loss is difference between the maximum possible surplus and the actual surplus, so that answer says that the equilibrium maximizes surplus because there is no difference between the equilibrium surplus and the maximum possible surplus.*

1.4   We know that there is a limited number of parking spaces in downtown Indianapolis, and they will all be taken each morning. Suppose it turns out that it costs more to check the parking meters than is collected in revenue. Explain why total surplus might nonetheless fall if we make parking free.

*Surplus would fall. The quantity wouldn't change, so there wouldn't be the standard kind of triangle loss, but some of the people who found parking spots when there was excess demand would be people who didn't think it was worth it at the original price. Since they get less surplus than the people who were parking before, and the people they push out get zero, total surplus has fallen. In the figure, person y takes a free parking spot instead of person x, who values it more.*
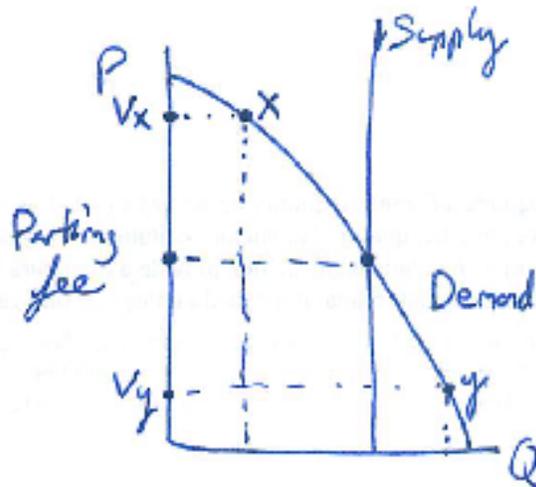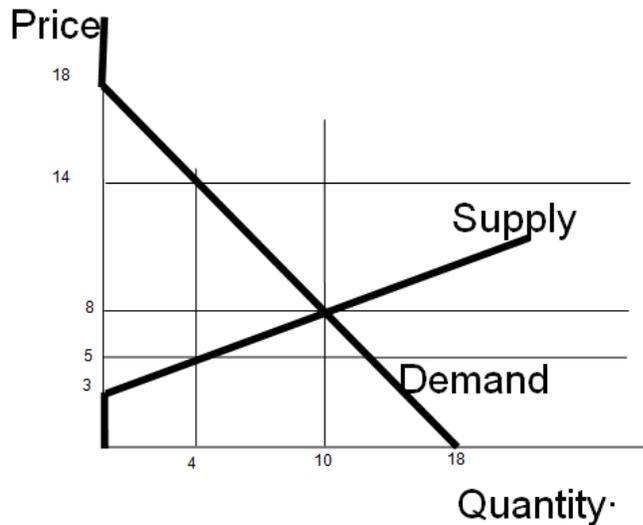


1.5   Suppose demand for corn is given by Q=18-P, and supply is given by Q= 2(P-3) if the price exceeds 3 and Q=0 otherwise.

(a) Draw the curves and calculate the equilibrium price (not necessarily to scale. Label the curves and show the values where the curves cross the axes.

(b) If output were restricted to 4, what is the loss in total surplus?

*(a) The equilibrium is found from 18-P = 2(P-3), so 18-P= 2P-6, so 24=3P and P=8. Then Q=10. The supply curve cuts the axis at (Q=0, P=3) and the demand curve at (Q=0, P=18) and (Q=18, P=0).*

*(b) The supply curve price would be 5 and the demand curve price would be 14. The loss would be .5(14-5)(10-4)= 27.*



1.6    Suppose demand for widgets is given by $Q = 24 - P$, and supply is given by $Q = 3(P - 4)$ if the price exceeds 4 and $Q = 0$ otherwise.

(a) Draw the curves and calculate the equilibrium price and quantity (not necessarily to scale, but showing the shapes and labelling the values where the curves cross the axes).

(b) If the government forbids sale of widgets at a price of less than 12, what is the change in producer surplus? Give a numerical answer.

*(a) The equilibrium is found from 24-P = 3(P-4), so $24 - P = 3P - 12$, so $36 = 4P$ and $P = 9$. Then Q=15. The supply curve cuts the axis at (Q=0, P=4) and the demand curve at (Q=0, P=24) and (Q=24, P=0).*

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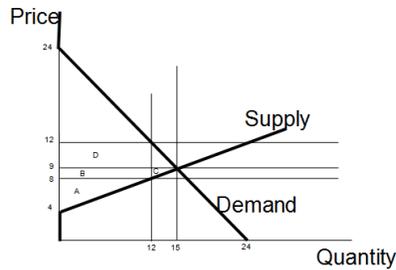
*(b) If P=12, sales are from the demand curve, at $Q = 24 - P = 12$.
The original producer surplus is area A+B+C. This has height (9-4)
and width 15, so its area is .5(5)(15) = 37.5.*

*The new producer surplus is area A+B+D. If Q=12, the price on
the supply curve is found from 12= 3(P-4), so 12=3P-12 and P=8.
Thus, area A = .5(8-4)(12) = 24 and areas B+D= (12-8)(12) = 48 and
the total producer surplus is 24+48=72. That means the increase is
72-37.5 = 34.5. Producers are helped because they are not allowed
to compete the price down, and the high price compensates for the
loss of sales.*

1.7    Show on a supply-and-demand diagram the deadweight loss if the
federal government required the price of health insurance to drop at
least 10% below the current market price.

*This is a price ceiling, quantity traded will drop, resulting in
the deadweight loss of L shown in the diagram.*

P

S

$P_{market}$

$.9\ P_{market}$

L

D

$Q_{market}$    $Q_{insurance}$

$Q_{after\ price\ reduction}$
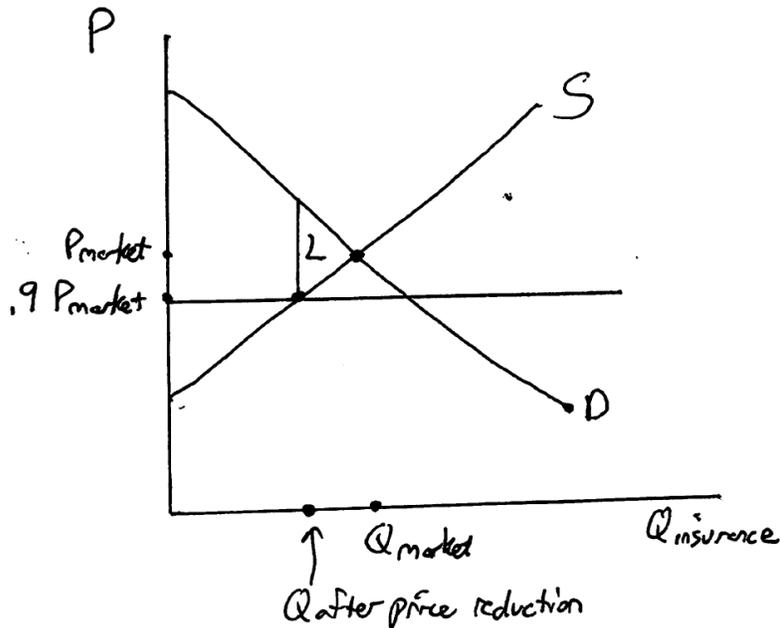
1.8    The market price of wheat in a country has risen from \$2/bushel to \$6/bushel because of a famine. To help the poor, the government imposes a cap of \$4/bushel on the price of wheat. How does this affect the poor? Does whether rationing is efficient or inefficient make a difference? Illustrate using one or more diagrams.

*When the government imposes the price cap, sellers won't want to sell as much, so the quantity sold will fall and there will be excess demand. Thus, on average people won't have as much to eat. On the other hand, those who can actually buy at the cheaper price are benefitted. Will those be rich, or poor? If rationing is efficient, the people willing to pay the most are the ones who will get the wheat, which probably means the rich. The poor go from buying at \$6 to not being able to buy at all, so they starve. If rationing is inefficient, then the people willing to pay the least (but willing to pay \$4) will get the wheat. That probably means poor people, so inefficient rationing helps the poor. One caveat, though: Maybe the rich people are willing to pay the most for the first bushel of wheat they eat for bread, but they also are willing to pay more than \$4 for extra wheat that they can use to make cake. In that case, it might*

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*actually be the rich who benefit from inefficient rationing.*
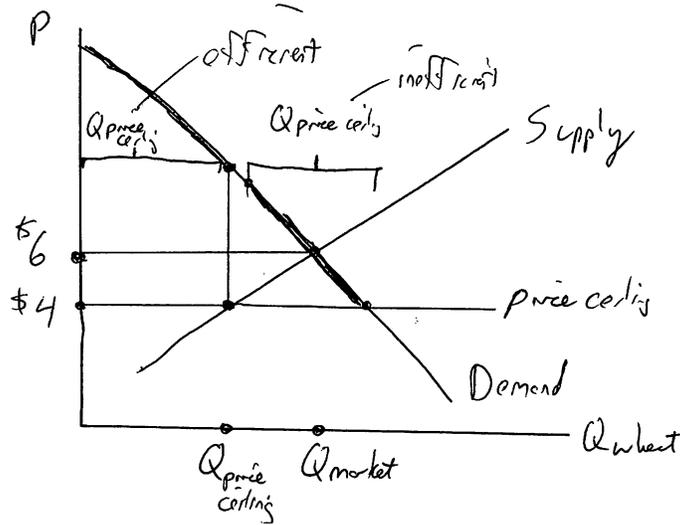


1.9 (a) Suppose the quantity of snow rakes supplied is $Q = -12 + 2P$ for $P > 6$ and 0 for $P < 6$. You do not know the demand curve. The market is currently in equilibrium at a price of 7. What quantity of rakes is sold? What is one possible demand equation that would yield that quantity?

(b) A snowstorm hits and the demand curve changes to Q = 48-4P. What is the new equilibrium quantity and consumer surplus?

(c) The attorney-general declares a price ceiling of 7. What is the new consumer surplus?

*(a) $Q = -12 + 2(7) = -12 + 14 = 2$ rakes. The demand curve, if linear (nonlinear examples are OK too) must satisfy $Q^s = -12 + 14 = a - 7b$. One demand curve yielding that is $Q^d = 2$, perfectly inelastic demand. Another is $Q^d = 16 - 2P$.*

*(b) Equating supply and demand, 48-4P = -12 + 2P so 60 = 6P and P =10. Then Q = -12 + 20 =8. The consumer surplus is .5(12-10)(8) = 8.*

Price / Quantity graph
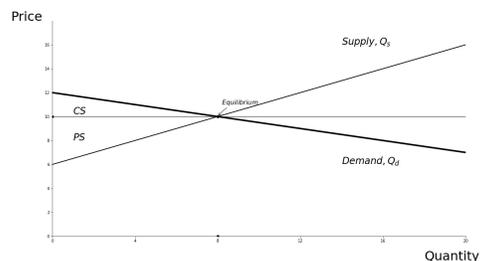
*(c)* $Q = 2$ *from the supply curve if* $P = 7$. *At a quantity of 2, the price on the demand curve is* $46/4 = 11.5$, *so consumer surplus is* $.5(12 - 11.5)(2) + (11.5 - 7)(2) = .5 + 9 = 9.5$.
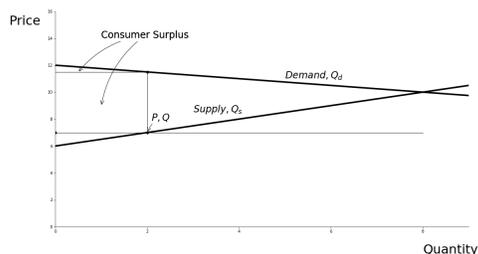


1.10    Suppose a city imposes a price floor on sandwiches sold by food trucks, wishing to reduce competition with bricks-and-mortar restaurants.

(a) On a diagram show the resulting loss of total social surplus if rationing is efficient.

(b) Explain how the loss of total surplus would change if rationing is inefficient.

(c) Show on a diagram which sellers on the supply curve are able to find customers when rationing is perfectly inefficient— that is, the highest-cost sellers are the ones who get the customers. Assume that output originally is 100, that the quantity demanded falls to 60 at the price floor, and that at the price floor the quantity supplied is 180.

*(a) The lowest-cost firms will be the ones that produce under efficient rationing. The loss in surplus will be Z+X after the price rises from* $P_0$ *to* $P_1$. *Producer surplus will rise to V+Y. The lowest-cost firms will produce— those with costs between* $C_0$ *and* $C_1$.
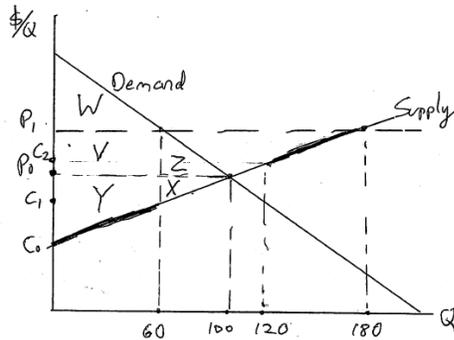
*(b) The loss would increase. Some of the low-cost firms, those with costs between $C_0$ and $C_1$ would not be able to find buyers. Instead, some of the firms with costs between $C_1$ and $P_0$ will produce and sell. Those high-cost firms won't earn as high a surplus, so total surplus will fall.*

*(c) Perfectly inefficient rationing means that among all the sellers will to sell at the controlled price $P_1$, the sellers with the highest costs are the ones who can find customers. The quantity demanded is 60, so those are the 60 units of sellers from the point of the supply curve where $P = P_1$, which is at $Q^s = 180$, down to $Q^s = 120$. They have costs from $C_2$ up to $P_1$.*

## Chapter 2: Market Failure

2.1    Why does the equilibrium output in a market with a negative externality not maximize total surplus?

*If there is a negative externality, then the social marginal cost is greater than the private marginal cost. The sellers will look only at the private marginal cost, and in equilibrium that equals the marginal benefit to consumers. If output were reduced, total surplus would rise because the social marginal cost at the competitive output is greater than the marginal benefit to consumers.*

2.2    What is the difference between a marginal benefit curve and a demand curve?

*The marginal benefit curve's height measures the actual benefit the consumer receives from buying a unit of a product— the amount he would pay if he were perfectly-informed— while*

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*the demand curve shows how much he is willing to pay in his current state of information. Thus, if a consumer is perfectly informed, his demand curve will be equivalent to his marginal benefit curve.*

2.3    In a neighborhood of homes with small children, Smith builds a concrete swimming pool in his backyard. Explain why this could create both positive and negative externalities.

*This would create positive externalities because Smith could invite his neighbors to swim in his pool. It could create negative externalities because of the dirt and noise from construction and because the pool might be dangerous to neighborhood children who went uninvited and swam alone.*

2.4    If unregulated, paper manufacturing creates water pollution. Suppose that if paper sales are $Q$ then the cost of the water pollution to people downstream is $3Q$, and that supply and demand take their conventional moderately price-elastic shapes.

(a) Draw a diagram to show the levels of paper sales under laissez faire equilibrium and under optimal regulation.

(b) Show how much total surplus increases going from laissez faire to optimal regulation, and how the total cost of water pollution changes.

*(a) The cost of the water pollution to people downstream is 3 per unit of paper sold; if amount Q is sold, the cost is 3Q. Thus, the social cost is always 3 higher than the supply curve, as shown in the diagram above. The supply and demand curves take their typical shapes, neither being perfectly elastic (flat). The initial output is where the supply and demand curves cross, Q(no reg.). The optimal regulation would reduce sales to Q(reg.), where the marginal social cost crosses the demand curve.*
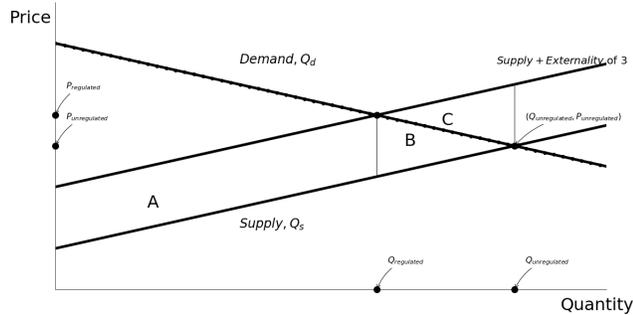
*(b) Total surplus increases by area C going from laissez faire to optimal regulation, because the units between Q(reg) and Q(no reg.)  have a social cost in excess of their social benefit, the height of the demand curve.  The pollution cost to third parties is the area between the social cost curve and the supply curve. That is area A+B+C under laissez faire, since output is Q(no reg.), and it falls to area A under regulation.*

2.5 Before the Americans with Disabilities Act was interpreted as requiring businesses to provide ramps for access for handicapped people, few businesses except those such as hospitals provided them.  Is there a market failure in this case which would means that the ADA increases total surplus? If so, what market failure is it? If not, what would justify the law?

*There is no problem of property rights, contract enforcement, monopoly, or externalities.  If businesses did not realize that their profits would increase if they provided ramps, but government knew better, there was the market failure of asymmetric information. That is very unlikely. Market failure does not seem to be the motivation. You might justify the law anyway, by saying that it is the fair thing to do under your religion or ethical system, even though it costs the businesses more than it helps the handicapped people.*

2.6     Although lack of clear property rights leads to market failure, we see many examples of it in the world where people have decided not to assign an asset to a single person yet there seems to be no problem maximizing surplus. Often that is because assigning and protecting property rights incurs transactions costs. What would be the effect of requiring the following property

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rights to be owned by an individual person, and why isn't it done?

(a) A house jointly owned by husband and wife.

(b) The right to sit in the third seat from the left in the back row of the classroom.

(c) The public street in front of your house.

*(a) The husband and wife trust each other and it is convenient for each of them to be able to control and sell the house. If the husband dies, for example, the wife still owns the house, whereas if it was in the husband's name, a court would have to examine his will and decide whether she should retain it. Also, if the husband is not home, it is useful for the wife to have the property-owner's right to tell trespassers to leave, which if she were merely a guest might require her to have a signed document from the owner. (In actuality, the law deals with this by a complex set of rules as to who can act in lieu of the owner when he is absent.)*

*(b) The right to sit in a particular place in a classroom actually does often have an individual "owner", morally if not legally. If you have been sitting in that spot for six weeks, you may feel miffed if someone else sits there, and he may feel guilty. We do not want this right to be very strong, though, because then everyone would have to remember which seats were "owned", and if they had some special reason to sit there on a particular day they would have to "buy" the seat, which incurs transaction costs. Also, we may wish to avoid a rush the first day to acquire ownership of good seats.*

*(c) If the house-owner also owns the street, he could exclude people from driving there. Each owner could create a bottleneck from spite because he doesn't like certain people or in order to each collect a toll, which would create large transaction costs because drivers would have to find the owner and the price and arrange to pay him.*

2.7   The true value of cough medicine to consumers is the typical smooth downward-sloping line. The highest-valuing 900 customers overestimate the value by 3 dollars per bottle but the lowest-valuing, with values from $10 to $0, know their true values. Supply is flat at $8 per bottle. The orginal quantity sold in the market is 1,200 units.

(a) Draw the supply curve, the demand curve, and the marginal benefit curve.

(b) Show the area of the consumer surplus after the government informs the high valuers of their mistake.

*(a) The supply curve is flat at 8 dollars. The marginal benefit curve slopes down and hits the $8 level at somewhere greater than 900, since we know that there are informed buyers with values of up to $10. The demand curve is the same as the marginal benefit curve for those buyers with values between $0 and $10. It then jumps to $3 higher than the marginal benefit curve for all higher values.*

*(b) The consumer surplus is the same regardless of whether consumers are informed. It is the area between the marginal benefit curve and the price of $8.*
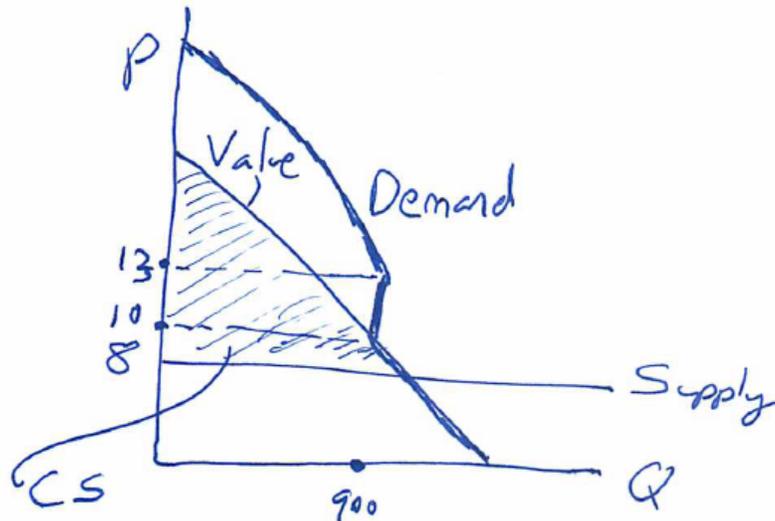


2.8      Currently Apex, Inc. has a monopoly on widgets because it first introduced the product. A widget is too close to a wodget to be patentable, though, so next year Apex will lose its monopoly. Apex's costs are $10/widget for the first 100 units of widgets and $16 for any greater amount. The entrants will all have costs of $16/widget. Currently, Apex is selling 180 units at $22/unit.

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Market demand at a price of $16/unit is 240 units.

(a) What is the current producer surplus?

(b) How much will total surplus rise after entry becomes possible?

*(a) To find the current producer surplus, start with the priceof $22 and the quantity of 180, which yields revenue of $3,960. The producer's cost is 100\*10 for the first 100 units and 80\*16 for the rest, which comes to 1000+ 1280= 2280. Thus, producer surplus is 3960-2280 = $1680.*
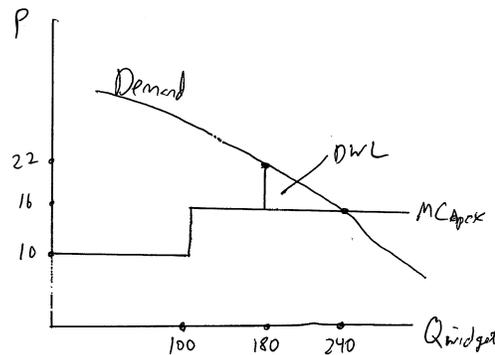


*(b) After entry, the price will fall to $16/unit and the quantity will rise to 240. The figure shows that surplus will rise by the amount of the triangle of length 240-180 and height 22-16, which is .5 (60) (6) = 180.*

2.9 Read the *Wall Street Journal* article, "FTC Bars Pom Juice's Health Claims." http://online.wsj.com/article/SB10001424127887323468604578245740405648024.html.

(a) Analyze the FTC's case against Pom using marginal benefit and demand curves.

(b) How did Pom's ad quoting the judge's words affect the marginal benefit and demand curves?

(c) What would be the effect on other food companies if the FTC obtains an injunction against Pom but does not make them pay monetary damages?

*(a) The FTC says Pom is deceiving consumers into thinking that pomegranate juice prevents premature aging, heart disease, stroke, Alzheimer's, and cancer by using misleading and outright false advertising. In that case, consumers will buy according to the demand curve in the diagram below, which is above the marginal benefit curve. As a group, consumers*

*will have surplus of C-B, but they will be expecting surplus of A+C. The Q2 consumers who buy at Pom's price do not all regret their purchase (the first Q1 do not), but they all are disappointed. Note, however, that pomegranate juice does taste good even if it has no health benefit, so the marginal benefit curve is not flat at 0.*
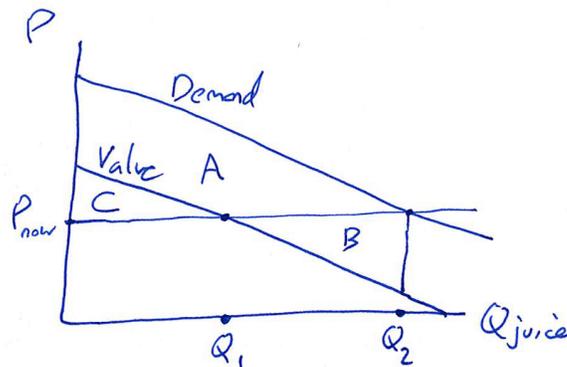


*(b) That ad was one source of the shifting out of the demand curve beyond the marginal benefit curve. It would not affect the marginal benefit curve, just the demand curve.*

*(c) In that case, Pom will have come out ahead. They will no longer be able to use misleading advertising, but since they aren't punished for their past advertising, their profits will have at least temporarily been raised. Other food companies will see this and may imitate Pom, thinking that they can lie "for free" until the FTC tells them to stop.*

2.10    Suppose hunting has negative externalities due to accidental shootings. Someone proposes reducing the price of hunting licenses to cure the market failure. Is this a good idea? Explain carefuly.

*No, it is a bad idea. Because there are negative externalities, the amount of hunting is probably too big to begin with (though maybe the initial price of licenses is enough to overcome that). Reducing the price will just increase the amount of hunting, increasing the amount of externalities.*

*Note that it doesn't matter how producer and consumer surplus change in response to a subsidy. That is more complicated. Both will rise, but the government will lose money— just the opposite of what happens with a tax.*

3.1    Explain how the ideas of the tyranny of the majority and rational ignorance are alike and unlike each other.

*The idea of the tyranny of the majority is that the majority of voters in a democracy can impose their will on the minority. The idea of rational ignorance is that voters will not become informed about their vote unless they think it is worth the cost to become informed, and so will often remain ignorant.*

*Both of these things lead to government failure, but in different ways. The problem with the tyranny of the majority is that a policy will pass a vote even if it hurts the minority more than it helps the majority. The problem with rational ignorance is that even the majority might vote the wrong way, or not vote at all, if the voters do not bother to become informed. The problem of rational ignorance will often lead to something like "tyranny of the minority", because the minority will often have more concentrated interests and thus more incentive to become informed than the majority.*

3.2    Read the **Wall Street Journal** article, "Beijing Wields Big Stick Against Megaships."

(a) Evaluate the claims that there is vicious competition and overcapacity in the Chinese shipping industry and that the new Vale ships will affect that competition very little.

(b) Where should Vale look for political support as it tries to get permission for its ships to operate, besides the Brazilian government?

*(a) If there is vicious competition and overcapacity, why would Vale enter with new ships? Price would be below average total cost. If the new Vale ships would not affect competition much, why would the Chinese shippers complain? Thus, all three claims are silly.*

*(b) The Chinese steel industry is a potential ally.*

3.3    Springville currently has three movie theatres, which sell equal numbers of tickets. Two of them wish to merge, which would raise the price from $10 to $16. The merged company would keep both theatres and still sell 2/3 of the tickets. The marginal cost of serving a customer is $6, less than the price because the market is not perfectly competitive and the theatres generally

avoid price wars. The demand curve is $Q = 20 - .5P$, where quantity is measured in thousands of tickets per year.

(a) Who would lose as a result of the merger? How much per year would they pay to prevent it if there is no free-riding problem?

(b) Who would win as a result of the merger? How much per year would they pay to lobby to get the antitrust authorities to allow it if there is no free-riding problem?

(c) What kind of free-riding or other problems might cause each side to pay less than the amount it wins or loses?

(d) Why is it better to have a single anti-monopoly law administered by a government agency rather than have the legislature evaluate each merger individually?
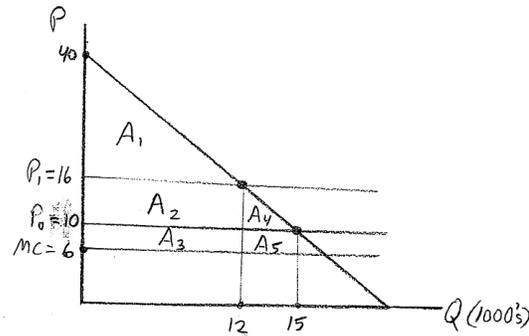


*(a) Consumers would lose. To get consumer surplus, start by finding the inverse demand curve, $P = 40 - 2Q$. That shows that the highest price any consumer would pay is $40. The initial price is $10, for a quantity of $Q = 20 - .5(10) = 15$, so the original consumer surplus is $.5(40 - 10)(15) = 225$, which is $225,000/year (area $A_1 + A_2 + A_4$ in the diagram) After the merger and price increase, consumer surplus is $.5(40 - 16)(12) = 144$, which is $144,000/year (area $A_1$). Thus, consumers would pay up to $81,000/year to prevent the merger.*

*(b) All three theatres would win, even the one that is not merging, because all three would gain from the price rise. Producer surplus starts at $(10 - 6)15 = 60$, $60,000/year (area $A_3 + A_5$). It would rise to $(16 - 6)12 = 120$, $120,000/year (area $A_2 + A_3$). So the theatres would pay $60,000/year to be able to merge.*

*(c) There are many movie-goers, each with a small amount at*

*stake. Thus, many or most will be rationally ignorant and will not be active in a move to block the merger. There are only three theatres, so each would be willing to lobby up to $20,000 individually.*

*(d) If they look at each merger individually, each will be subject to political influence and the problem of rational ignorance. A government agency will not be so subject to political pressure.*

3.4     In the United States, about 4,500 sugar beet and sugarcane farms produce sugar, but sugar is also imported from countries such as Brazil (United States Department of Agriculture "U.S. Sugar Production"). Imports are subject to a quota of about 2 billion pounds per year. Suppose that in a given year the world price of sugar is 20 cents/lb but the U.S. price is 30 cents/lb, and that though 20 billion pounds per year is currently sold in the U.S., that would rise to 25 billion pounds if the price fell to the world level. You may assume that the product cost of U.S. producers is constant at 25 cents/lb and that the transportation cost to import sugar is negligible.

(a) How much do the sugar farmers benefit from the quota, and how much would they be willing to spend to keep it in place if there were no free-rider problem?

(b) Who else benefits from the quota, and how much would they be willing to spend to keep it in place if there were no free-rider problem?

(c) Who is hurt by the quota, and how much would they be willing to spend to abolish it if there were no free-rider problem?

(d) Why do the quotas continue to exist if they hurt Americans by more dollars than they help them?

*(a) The sugar farmers benefit. The price is raised by 5 cents/lb and they sell 18 billion pounds, so they benefit by .9 billion dollars per year.*

*(b) Whoever gets to import the 2 billion pounds also benefits. That might be merchants who ship sugar, or foreign producers, depending on how the exporting country's quota is administered. The value of buying at the world price and selling at the US price is 10 cents/lb, so the certificates are worth $.2 billion, which is 200 million dollars per year.*

*(c) Consumers are hurt. If the quota were abolished, the price would fall to the world price, a drop of 10 cents per pound. Thus, they would save 2 billion dollars per year on the 20 billion pounds they buy now. The quantity would expand by 5 billion pounds, however. If we assume linear demand, this creates extra consumer surplus of .5\*(10 cents/lb)\*(5 billion lb) = .25 billion dollars.*

*(d) Sugar farmers are a small and concentrated group, so they find it easier to organize, lobby, and base their votes on sugar policy than do consumers, who are numerous and who each have little at stake.*

3.5     (a) What effect would banning food trucks have on the supply and demand curves for fast food generally and for brick-and-mortar fast food by itself?

(b) Why might we expect government failure in the regulation of food trucks?

(c) Think of some form of market failure that restaurants could use as an excuse to justify the banning of food trucks.

*(a) If we are talking about the market for all kinds of fast food, the ban would shift back the supply curve, but leave the demand curve largely unaffected (though to some extent it would shift the demand curve back too, since there would be less selection for consumers). If we just talk about the market for brick-and-mortar-restaurant food, the supply curve would be unaffected in the short run, but demand would shift out. In the long run, the supply curve would shift out too.*

*(b) Restaurant owners will be more politically aware than food truck owners. Consumers will be rationally ignorant, not paying very much attention to regulation. Thus, the political forces will be weighted toward regulation to help restaurant owners even if that hurts consumers more.*

*It is not a correct answer to say "because the regulation will reduce surplus". That is the definition of government failure, and the question here is why government failure would occur—why the government would impose regulations that do not maximize surplus.*

*(c) If the safety of the food from trucks cannot be monitored well enough by the city health department, that could be a reason to ban them based on asymmetric information. If the*

*trucks create congestion in the streets, that would be the market failure of negative externalities.*

*The fact that food truck competition drives down restaurant profits is not market failure. That is how market works to maximize surplus. Any profits lost by the restaurants are gained by the food trucks or by consumers. This is a very important point.*

3.6    Read the **Wall Street Journal** article,"How Washington Ruined Your Washing Machine: The Top-Loading Washer Continues To Disappear, Thanks to the Usual Nanny State Suspects.' '

(a) Why did the federal government impose regulations that prohibited most of the washing machines existing in 1996?

(b) Why did the Dept. of Energy say that washing machine quality and cost would not fall under the new regulations?

*(a) The public reason, and undoubtedly part of the explanation, is that the government wanted people to use less energy and less water. Why this is desirable is unclear. Some people thought that consumers were irrational in preferring cheaper and more effective machines that used more water and energy. Others think that it is good to use less energy and more capital and labor. It reduces surplus to force people to use less energy, but some citizens seem to think that using less energy is a goal in itself, even if there is no material benefit. Still another reason is that using labor and capital instead of energy might result in less carbon dioxide emission, which may be a negative externality.*

*A less public reason is that the government action benefitted whichever companies were best at making water-economizing washers— most likely the companies that made upper-end machines and had better research departments. The extra cost would be similar for all washers, high-end and low, which meant a bigger percentage increase for low-end machines bought by the less affluent. They value money more and environmentalism less, but they are also less politically aware than rich people.*

*In answering a question like this, it is important to consider both public-interest and private-interest reasons, and to look for whether there really is a market failure to be addressed. Even more important: don't believe everything you see written*

*in the newspapers. The surface reasons people give for policies are not always the real reasons and when they are not, they often do not make sense.*

*(b) They lied. It was obvious that to meet the new standards, the machines would cost more. If it was cheaper, the manufacturers would already have been doing it. They did not want to say anything negative about the policy, or anything that would hint at how it would be particularly hard on the poor, so, as governments often do, they pretended their regulation was Pareto-improving. Another advantage of that for the government officials is that they can blame the industry for price increases. Most consumers will have no idea that it was government regulation that drove up prices. Still another consideration is that Energy Dept. officials have short time horizons and a regulation that looked good would help their careers. As in part (a), don't believe everything you read, and think about the incentives of government officials as well as of corporations.*

3.7     Read the 2014 *Wired* article, "How Obama Officials Cried 'Terrorism' To Cover Up a Paperwork Error.' '

(a) What do you think motivated Attorney-General Holder, Mrs. Pipkin, Judge Alsup, Director of National Intelligence James Clapper, and Mr. Tyler to take the positions they did?

(b) Is there any way to prevent officials from defending bad decisions they make?

*(a) Attorney-General Holder was trying to justify the actions of his subordinates, because he needed to get along with them and felt loyal to them. Mrs. Pipkin was being paid by Mrs. Ibrahim to defend her. Judge Alsup had no material interests at stake, and was trying to do what he thought the law required. Director of National Intelligence James Clapper was trying to defend his subordinates and the Administration generally, since his ability to do his job depended on those two things. Mr. Tyler was just doing what his bosses in government told him to do, since otherwise he would lose his chances of promotion and since that was his duty as a lawyer.*

*(b) This is a deep problem. Articles like this are part of the solution, since they bring attention to rationally ignorant voters the behavior of government officials. Once voters know*

*about this, it affects their voting, which changes the objectives of elected officials such as President Obama.*

3.8 The government has encouraged renewable energy in a variety of ways— guarantees to pay off loans if the company defaults, guaranteed power purchases, required use of renewable energy by public utilities, simple cash grants, exemption from property taxes, and depreciation tax breaks.

(a) Why does it use so many different ways instead of just one?

(b) What are the advantages to the government decisionmakers of each kind of subsidy relative to simple cash for producing more renewable energy?

*(a) First, note that the question is not why the government encourages renewable energy, but why it does so in a variety of ways rather than picking the best way and doing it on a larger scale. The answer does not require addressing why the government wants to encourage renewable energy.*

*It is hard to explain the variety of programs using good government arguments. Why not simply subsidize the price of energy produced using renewable energy sources using direct cash per unit produced, if the goal is to get more renewable energy?*

*One possibility is that elected officials wish to conceal how much is being spent on these programs. Using a single program such as larger cash grants, the voter is more likely to see the true cost. Using a variety of programs, many with hidden price tags (such as loan guarantees and advance purchases), voters have a hard time seeing the total cost. In the same vein, the various complex programs make it easier to conceal that particular people have preferential access to the programs. A second possibility is that different elected officials want claim credit for doing something about renewable energy, so each one wants his own program even if expanding an existing program would make more sense.*

*(b) The question is not why the decisionmakers use subsidies, but why they prefer each kind relative to a simple cash subsidy. The answer is not that cash would not encourage renewable energy; the cash is a subsidy for company actions rather than just a gift to anybody who asks, even if they do nothing in return. Loan guarantees have no immediate cost and can*

*be be targeted to favored companies. Guaranteed power purchases do not require tax increases, since they are paid via higher electricity prices, which can be blamed on the private utility. The same is true of required use of renewable energy. Exemption from property taxes requires no cash outlay by the government, though it must raise other taxes to compensate, so the subsidy is somewhat concealed, which offends voters less. The same is true of depreciation tax breaks.*

*All of these methods eventually will raise taxes, even if the cash flow is not immediate or certain. Tax breaks, for example, mean that some other kinds of tax, on other people or companies, has to be increased to make up for the lost revenue. To be sure, some subsidies can end up costing zero ex post, but they have even higher costs ex ante. A loan guarantee, for example, ends up costing nothing in cash flow if the company is able to pay back its loans. With some probability the company won't be able to though (if that probability were zero, the guarantee would be worthless to it), in which case the government bears a huge cash burden. It is like the choice between the government paying $50 million for sure or taking a 50-50 gamble of $0 or $100 million. The gamble is not only riskier for the government, it also creates more triangle loss because the triangle loss from raising $100 million is more than twice that from raising $50 million.*

3.9 Read the article, "Get Your Kitchen Out of My Parking Space! City Governments across the Country are Threatening to Kill the Food Truck Revolution with Dumb Regulations, ' ' *Slate*, Matthew Yglesias (2012).

(a) Use supply-and-demand analysis to show how the producer surplus of restaurants would be affected by food trucks, and how much the restaurants would pay for a law to ban them.

(b) If allowing food trucks would increase total surplus, how is it that a ban on them could succeed in getting passed by the city council?
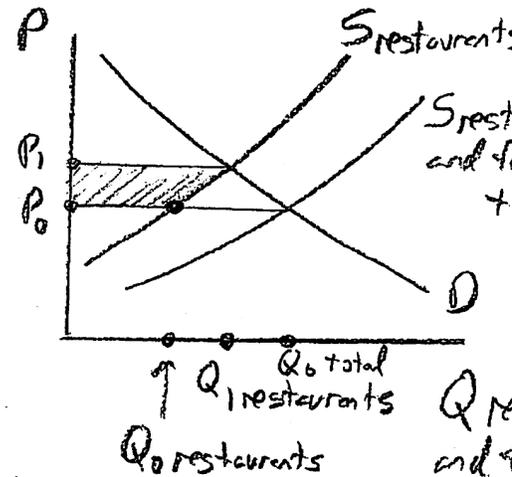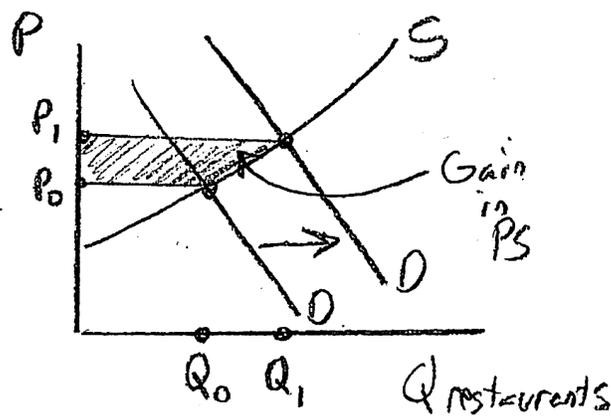
*(a) Getting rid of the food trucks can be looked at in two ways. In the left diagram the change is is a demand shift and the quantity is just of restaurant food. Demand increases when the food trucks are restricted, so both price and quantity rise for the restaurants. They would be willing to pay the shared amount, their gain in producer surplus, to pass the law.*

*In the other diagram, the change is a supply shift when the product is total meals from both restaurants and food trucks. Restricting the food trucks shifts the supply to be composed entirely of restaurants. The price rises, and though the quantity of food in total falls, the quantity of food sold by restaurants rises. Again, producer surplus of restaurants rises by the shaded amount and they would pay that to obtain the law.*

*(b) A ban would not be passed if every person had equal weight in politics. Restaurant owners would have more influence, though, because they are longer established than food trucks and thus would have better knowledge and connections, and consumer losses are too diffused for consumers to notice, so rational ignorance would reduce their power.*

*Reasons such as the health of children are bogus, mere excuses. Don't believe everything you read in the newspapers.*

3.10    The U.S. government is banning production of conventional light bulbs in 2014, saying that they use too much electricity. This is one possible response if consumers underestimate the value of the new, more expensive light bulbs. Why might the government

have chosen this particular policy?

*Banning conventional light bulbs will make consumers buy the new light bulbs instead. One reason for doing this is if consumers underestimate the value of the new light bulbs, and so would not buy them otherwise. This is odd, though, since the sellers have plenty of incentive to advertise the value of the new bulbs. We usually don't need the government to ban inferior old products.*

*This particular policy is just one way to overcome information asymmetry. Why would the government choose it over others? One other way would be for the government to provide information to consumers. Another way would be for the government to require light bulb packaging to list the electricity savings from the new bulbs. The most likely reason the government has chosen the new policy, however, is that even fully informed consumers would not want to buy the new bulbs, because they are not surplus-maximizing. Environmentalists and light bulb companies would therefore lobby the government for a regulation to force consumers to buy the bulbs to achieve their objectives of less electricity usage and higher profits. Since they are concentrated interests and consumers are not, government failure seems likely.*

*This question points to one of the most important things you should learn in this course: regulations are frequently imposed for the good of special interests, not the general good, but special interests will never openly say that they want a regulation just for their own benefit.*