ES211 – Principles of Microeconomics
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Lecture Note # 6

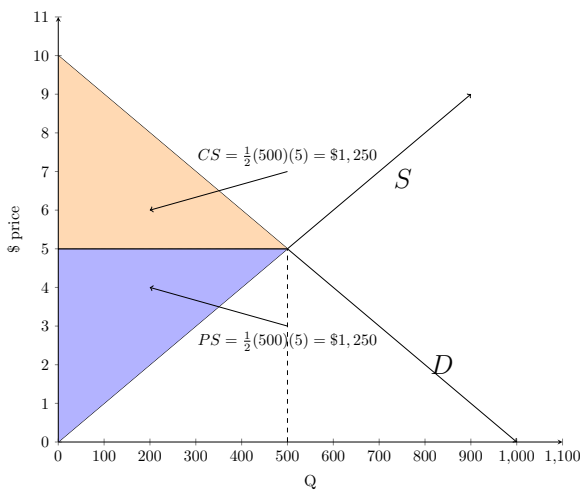
6. The Invisible Hand and Price Controls

"Adam Smith was the first to perceive that we have stumbled upon methods of ordering human economic co-operation that exceed the limits of our knowledge and perception. His 'invisible hand' had perhaps better have been described as an invisible or unsurveyable pattern. We are led - for example by the pricing system in market exchange - to do things by circumstances of which we are largely unaware and which produce results that we do not intend. In our economic activities we do not know the needs which we satisfy nor the sources of the things which we get." – Friedrich Hayek

1. First Fundamental Welfare Theorem

Now that we have established the Supply and Demand Framework, we want to turn our attention the welfare considerations of various market scenarios. Supply and demand become even more explanatory than our current notion, when we start considering issues like **Price Controls**. Price controls are set by a central authority (government) and restricts the ability of a market to set a price. We may be quick to suggest a government should maintain low prices for certain goods it deems important enough. Rent controls were regulations in big cities throughout the 60s, 70s, and 80s which sought to make rental properties more affordable for low income renters. Let's analyze this sort of government intervention from the framework of supply and demand.

Recall our equilibrium condition:



Here we can see that the **Market Clears** at a price of \$5 and a quantity of 500 units. When a market clears, this means that at the market price, the quantity supplied just satisfies the quantity demanded. We have no shortage or surplus, and therefore no dead weight loss. This also means that we are maximizing our **Total Economic Surplus** (Consumer Surplus + Producer Surplus). We can see that $TES = \$2,500$.

The above logic refers to the **1st Fundamental Welfare Theorem of Economics**, which states *that competitive markets maximize economic efficiency.* This matters because have always tied their notions of human prosperity to the ability of their economies to grow, provide jobs, and generate wealth. It is pretty easy to argue that all else equal, an efficient economy will be good for the society that benefits from that economy.

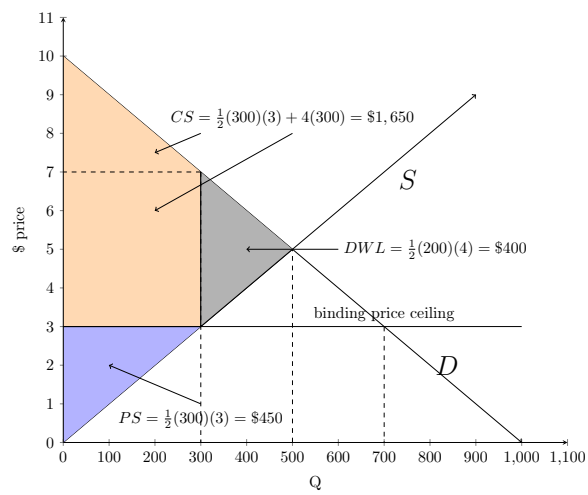
Now, if we imagine an economy made up completely of these competitive markets, then an argument is made that **Freely Competitive Markets** represent the optimal way for an economy to be organized. In other words, if a competitive market is efficient at equilibrium, then every competitive market is efficient at its equilibrium. This includes both capital and labor markets, which businesses purchase from as they acquire inputs (machines, computers, employees) that they use to produce their output (their goods). The implication here is that if ALL markets are freely competitive, then ALL markets are efficient, and if ALL market are efficient, then our economy is efficient, and society is better off. This is the so-called **Invisible Hand**! The invisible hand is said to push and pull goods across the economic system so that they are used efficiently. It isn't enough that rubber be made efficient, but the shoes that require rubber to produce is also assumed to be efficient. This is the market that

Adam Smith envisioned in the **Wealth of Nations**. It is crucial though that we take stock of the fact that a competitive market is define as a market where firms are price takers. That means that we have: 1) many firms/many buyers 2) perfect info 3) identical goods 4) free entry/ext. If these four assumptions hold, then the 1st Fundamental Theorem holds, and the invisible hand efficiently organizes our economy.

We have a very simple rule to understand here, as long as we have a competitive market then our market will operate efficiently without intervention. In fact, the argument goes so far as to say that ANY intervention in a competitive market will produce less economically efficient results. Let's discuss why.

2. A Binding Price Ceiling

When the government believes that the price of a good in a market is too high, they are making a ***normative decision***. This means they are making a judgment about the conditions set by a market. Now, operating under the assumption that we're dealing with competitive markets, we'll assume that the 1st Fundamental Theorem holds. This implies that the only reason for the government to intervene is if it would be more efficient for the government to set a price than a market. This is very rarely true. History is littered with very poor experiences with governments imposing maximum prices on a good, regardless of their intentions. Let's see why.



In the above graph the government has set a **Binding Price Ceiling** at \$3. This means that sellers in this market cannot sell the product for a price greater than the \$3. Notice that if a price ceiling was set above market clearing price then it would have no impact on the market, because the market would equilibrate at \$5 and a price ceiling would mean you couldn't sell above a particular price, say \$7, but you have no incentive to do so because the market has set an equilibrium price of \$5.

A binding price ceiling is one that is set below equilibrium. You should see that this creates a shortage in the market ($shortage = 700 - 300 = 400$ units). This also creates dead weight loss (\$400) that stems from the loss in economic activity created by the price ceiling. Notice also that while consumers are better off, producers are worse off. In fact, producers are so worse off that the improvement on the consumer side does not make up for it. That loss in producer surplus ($\$450 - 1,250 = -\$800$)) is not made up for by the gain in consumer surplus ($\$1,250 - 1,650 = \$400$). And this difference is exactly equal to our dead weight loss (\$400). So, we have this simple equation to describe the creation of DWL when a binding price ceiling is used:

$$DWL = |\triangle CS + \triangle PS| = |\triangle TES|$$

This just says that DWL will be equal to the absolute value of the change in TES. Such a change will ALWAYS be negative if we're moving off equilibrium, as we do with the above price ceiling.

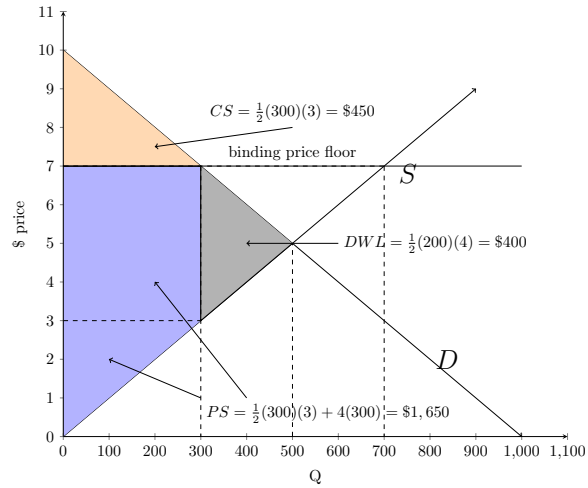
So, to recap: a binding price ceiling will ALWAYS cause a shortage and dead weight loss. This means that the price control causes economic inefficiency, and that society is comparatively worse off after the control than prior. We measure this reduction in social welfare by the size of dead weight loss, which is our measure of inefficiency.

So, did those price ceilings city governments used to create affordable rental units create the situation described above? Yes! Rent-control was policy failure, that led, as theory would tell us, to a reduction in available units. So, the price ceiling actually made life worse for the very people it was supposed to help. On top of this, landlords now have less incentive to keep up properties, were known to engage in under the table bribes with more wealthy

tenants to keep low income folks out, and actually led to a dramatic increase in the need for government housing. Despite the rosy intentions, price ceilings often make things worse not better. President Nixon also price ceilinged gasoline in the early 1970s because existing gas shortages had led to dramatic price increases. Trying to shield consumers from this gas price inflation, price ceilings were set below equilibrium prices. The result? You guessed it, even worse shortages!

3. Binding Price Floor

Students often get confused by the phrasing of price controls. Above you saw that price ceilings, if they are binding, are set below equilibrium. And as we'll soon see, **Binding Price Floors** are set below market equilibrium price. To avoid this confusion, just remember what the purpose of the control would be. A ceiling is a maximum price, therefore only below eq. ceilings matter. A floor is a minimum price, and therefore only above eq. floors matter. See below:

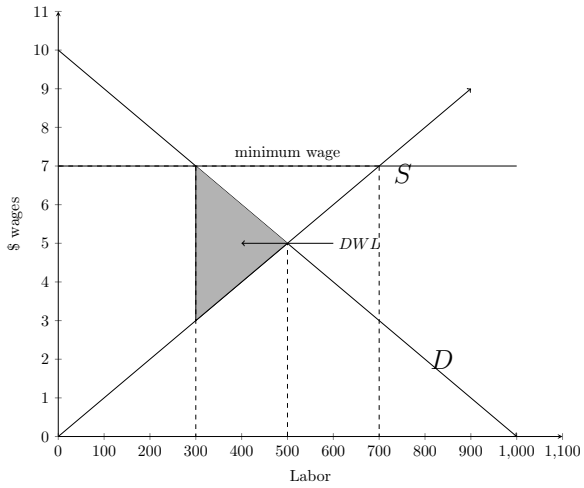


As we can see, the binding price floor does something very similar to the ceiling. First off, it creates DWL ($400) and a surplus ($700 - 300 = 400$ units), and it makes the market worse off than before the floor. Again, consider that in eq. this market produces and consume 500 units. A price floor of $7 will lead to only 300 units of consumption, despite 700 units of production. Those extra 400 units will have to be stored in inventory at high opportunity cost. This is inefficient!

Like rent-control and gas price-controls, we have also had some bad price floors. One example is the government setting a price floor on corn in the U.S. corn market. By doing so, the government created huge surpluses of corn, as our theory would predict. The government was able to convince farmers to not raise a stink by promising to buy corn from farmers, which it then used for ethanol production, government food programs, and trade with other countries. Such price controls created numerous problems. 1) the over abundance of corn led to what many doctors consider an over consumption of corn in the late 90s and early 2000s. 2) since the U.S. had such cheap corn, other countries, along with the U.S., didn't buy corn from traditional corn exporters, like Mexico and parts of South and Central America. This decimated many farms in these regions, as they could not compete with the low U.S. corn prices. Remember, the prices were only that low because the U.S. government was forcing it there and then buying the surplus. 3) The feeding of cows corn has become controversial, as the quality of the meat that corn-fed cows produce is said by some to be less healthy and make the animal more prone to sickness by being less nutritious than grass, which cows more naturally consume.

4. The Minimum Wage: A Binding Price Floor?

Perhaps the most discussed price control is the **Minimum Wage** . Which by definition is a binding price floor. It is clear that economic theory, specifically the theory of supply and demand tells us that binding minimum wages, which would require being set above market equilibrium, would lead to a surplus of labor. This means that more people would be willing to work at that wage than employers would be willing to hire workers at that wage. This is often cited as the exact reason why so many don't support increasing the minimum wage, which always seems to be an election year issue. So, has the minimum wage, which as been raised more than 15 times since 1960, led to labor surpluses? See graph on next page.



The above question is very hard to answer, but the empirical data would suggest that so far we have not seen much job loss due to modest increases in the minimum wage. So, are we to reject economic theory here? Well, probably not actually. While the 1st Fundamental Th. does say that any price control is less efficient than no price control and a minimum wage is indeed a binding price floor, the labor market fails more than one of the necessary assumptions discussed above. In most labor markets, there aren't many buyers, that is businesses have significant market power over workers, and so equilibrium wages are below what they would be in more competitive labor markets.

This is an important story. Economic theory tells us that raising the minimum wage should lead to job losses. Our experience with the minimum wage does not seem to bear this out. So, we ask ourselves what is it about labor markets that might cause them to fail the 1st Fundamental Th.? And we realize that labor markets are not necessarily very competitive. So, it isn't that economic theory is wrong, but rather that our labor markets do not themselves adhere to economic theory. Which should not be surprising at all.

Now, it MUST be said that this certainly doesn't mean that ALL minimum wage increases are a good idea. Especially if we're talking about Federal min. wages, which supersede state/local min. wages if those are below the Federal min. wage. Because labor markets are ultimately very specific to the regions they exist in, it is clear that an appropriate min. wage will also be specific to that region. Most modern economists agree that minimum wages are important to tip the bargaining scales slightly away from employers, but that such min. wages should be set regionally, not nationally.

The minimum wage is a good example of the limitations of supply and demand, and also a great time to mention that modern economics is very empirically driven. Meaning that we are constantly checking economic theory with newer and newer data sets, tweaking or wholesale throwing away old theories. As I've said in class, supply and demand is elegant, simple, and holds some robust explanatory power. But even specific concepts, like price controls, should be considered on a case by case basis with available data. It may seem problematic that economic theory would say rent-control and the minimum wage are bad, but that empirical economic analysis would only say the former is necessarily bad. But this isn't problematic at all, because we shouldn't expect an economic theory to hold all the time, just like gravity doesn't effect you the same way in all circumstances. Even gravity is influenced by other factors than itself, and so are markets.

All that being said, you may safely assume that binding price controls cause economic inefficiency, since we are of course relying upon supply and demand to tell our story.

5. Concluding Remarks

There aren't many concepts in economics that economists are significantly consistent on. We are notoriously all over the place. But few economists, regardless of politics, would suggest a price control. In fact, while most modern economists believe that current U.S. labor market conditions mean a minimum wage is necessary and important, that it would be more economically efficient if the labor market were more competitive and that equilibrium wages rose naturally out of competition between various employers and between various potential workers.