Government Intervention in Markets

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January 17, 2013
We know that “efficiency” is maximized at market equilibrium. But efficiency isn’t all that matters. What if you can’t afford to buy something you need to live? What if you can’t make enough to purchase the goods you need? How do we deal with these situations as a society? What are their effects on the market?
a **price ceiling, or price cap** is a maximum allowable price set by the government
illegal to charge a price above this price
it may be above the equilibrium price (non-binding)
a **binding** price ceiling:
  - is below the equilibrium price
  - creates a shortage
  - may create a black market or a secondary market, depending on the good in question
  - scalping, “key money”
Because of shortages, price ceilings increase search.
Rent ceilings cause us to look at rent ads, Craigslist, etc.
Price ceilings cause us to go on StubHub, look for scalpers, etc.
These increase the opportunity cost of purchasing items.
Non-Binding Price Ceiling

- No price above $1000 is allowed, but equilibrium is $800.
- This is non-binding because the market price is $800: like telling people you can’t rent for more than $1000 when they are going for $800.

![Graph depicting a price ceiling](image-url)
No price above $600 is allowed, even though equilibrium is $800

There is a shortage of 400 apartments \((Q_D - Q_S)\)
Like the last chapter, there is an efficiency loss because of undersupply.

It is the shaded region.

The book also states that there is potential loss from search in the pink rectangle.

Only true if people are actually searching, otherwise it is consumer surplus (most books have it as consumer surplus).
The book lays out a compelling case for why rent ceilings aren’t particularly fair.

- Apartments held onto by families for generations, generating wealth.
- Poor people generally unable to obtain apartments, despite their affordability.
- We have some other mechanisms that provide housing to the poor, including Section 8 vouchers.
- Landlords disinclined to rent to poor people for variety of reasons, both discriminatory and non-discriminatory.
Price ceilings frequently give rise to illegal black markets, or secondary markets.

I am from Ohio State, where football tickets routinely sell over face value, despite efforts to curb this behavior.

Cigarettes are frequently sold across borders, large trucks bring cigarettes from low-tax states to high-tax states.

These markets are purely artifacts of high prices.

If there were no price ceilings, these markets would exist, but would be legal.
a **price floor** is a minimum allowable price set by the government

again, illegal to charge less than the floor

examples include minimum wages, alcohol (beer and wine), and, from time to time, milk

two types of price floors again:

- *non-binding*: equilibrium price is above minimum allowable price
- unimportant, like telling someone the minimum they can charge is $1 when the market dictates $4
- *binding*: minimum allowable price is above equilibrium price
- too much for sale: producer surplus higher, but deadweight loss again
No price below $6 is allowed, even though equilibrium is $5
There is a surplus of 400 cases \((Q_S - Q_D)\)
The minimum wage is a price floor. Currently, we have a minimum wage of $7.25.

We can graph the minimum wage on a graph that captures the supply and demand for workers.

Workers make up the supply curve, because they are supplying their time and effort.

Firms and businesses make up the demand curve, because they want to purchase the workers’ time.

Producer surplus belongs to the \textit{workers}.

Consumer surplus belongs to the \textit{firms}.
No price below $7.25 is allowed, even though equilibrium is $5
There is a surplus of workers who want jobs, and they are unemployed ($Q_S - Q_D$)
(Not actually clear that $5 is the equilibrium wage in reality, this is just an example)
It is more plausible to think about the search cost story in this environment.

If you don't have a job, you will spend time looking for one:
- monster.com
- Craigslist
- Campus advertisements

Still, for any worker that gets hired, they make more than they would in a competitive market.

Book provides evidence that minimum wage doesn’t provide fair rules or results.

Ultimately, balancing need for living wage versus increased unemployment.
Pink area again represents potential loss due to search. However, it is just as reasonable to think of it as producer surplus for the workers who have jobs.
The government doesn’t just control prices. It also taxes goods, income, and services. Who pays these taxes? Seemingly obvious: the person who is charged the tax pays the tax. But taxes also affect our decisions about whether or not to buy: Shift demand curve in: we account for tax when we make decisions Shift supply curve in: raise the cost of a product. These divided burdens of taxation are called tax incidence We’ll next talk about how government decisions to raise revenue affect realized market efficiency. How much revenue can the government raise?
Taxes on Sellers and Buyers

- We will model a tax on sellers as shifting the supply curve to the left by the amount of the tax.
- This is a parallel shift of the supply curve.
- We’re going to focus on shifts of a linear supply curve so we can again calculate deadweight loss and tax revenue.
- For buyers, a tax shifts the demand curve to the left by the amount of the tax.
- This is a parallel shift of the demand curve.
- A tax will always create:
  1. A price equal to or higher than the equilibrium price for buyers.
  2. A price lower than or equal to the equilibrium price for sellers.
  3. Tax revenue for the government
  4. An area of deadweight loss in efficiency.
In this example, the $1 tax shifts the supply curve to the left. Buyers pay $3, sellers receive $2.
In this example, the $1 tax shifts the supply curve to the left. 

Buyers pay $3, sellers receive $2. 

Brown shaded area: Tax revenue = 
\[ P_{\text{buyer}} - P_{\text{seller}} \times Q = (3 - 2) \times 2 = 2 \]

Deadweight loss is the shaded area in green: 
\[ P_{\text{buyer}} - P_{\text{seller}} \times (Q^* - Q) \times \frac{1}{2} = (3 - 2) \times 1 \times \frac{1}{2} = 0.50 \]
In this example, the $1 tax shifts the supply curve to the left. 
Buyers pay $3, sellers receive $2.
Is the burden shared equally?
A burden is shared equally if the same amount of tax is imposed on buyers and sellers.
In this case, it is equal since buyers pay $.50 more than equilibrium and sellers receive $.50 less.
A $1 Tax on Buyers

- In this example, the $1 tax shifts the demand curve to the left.
- Buyers still pay $3, sellers receive $2.
In this example, the $1 tax shifts the demand curve to the left.

Buyers pay $3, sellers receive $2.

Brown shaded area: Tax revenue =

\[ P_{buyer} - P_{seller} \times Q = ($3 - $2) \times 2 = $2 \]

Deadweight loss is the shaded area in green:

\[ P_{buyer} - P_{seller} \times (Q^* - Q) \times \frac{1}{2} = ($3 - $2) \times 1 \times \frac{1}{2} = $0.50 \]
Regardless of whether a tax is imposed on sellers or buyers:

1. The price paid by buyers will be the same.
2. The price received by sellers will be the same.
3. The amount of tax revenue will be the same.
4. The amount of deadweight loss will be the same.

Will the amount of tax incidence always be the same?

No.
Who pays a tax?
It depends on how sensitive the buyer/seller is to price.
If the buyer has elastic demand, the seller pays most of the tax.
- Buyer cares a lot if the price goes up or down...
- Price buyer is willing to pay does not go up very much
- Seller ends up taking a much lower price
If buyer has inelastic demand, he or she pays most of the tax.
- Book uses insulin as an example.
- Cigarettes also a good example- buyers pay far more of the tax burden than sellers.
- If you really want something, a tax will generate a lot of revenue from you because you’re not that concerned about price.
In this example, the demand curve is elastic.

Think of this as the market for luxury chocolates or something like that.

Both buyer and seller will have tax incidence, but the seller will pay more of the tax than the buyer.

The red line is the amount the buyer pays ($0.80) while the blue line is the amount the seller pays ($1.20)

Doesn’t matter if we put the tax on the buyer or seller, buyer has less tax incidence
In this example, the demand curve is perfectly inelastic.

Think of this as the market for insulin or oxygen.

Only the buyer will have tax incidence—demand curve won’t shift.

We’ll shift the supply curve to the left.
The analysis is similar for supply curves.

- If supply is inelastic, then sellers pay more of the tax.
  - If supply curve is perfectly inelastic, it doesn’t shift (think about a stadium)
- If supply is elastic, then buyers pay more of the tax.
  - Sellers tack the tax onto their costs
Sometimes the government does not impose a price ceiling or a price cap.

Rather, they impose a quantity cap.

A production quota is an upper limit to the quantity of a good produced in a specific period.

In practice, it makes the supply curve perfectly inelastic after a certain point.

Again, can be binding or non-binding

- non-binding: production cap set above the equilibrium quantity, like telling firms they can’t make 1,000 of a good if they were only going to make 750

- binding: production cap set below the equilibrium quantity, like telling firms they can’t make 750 of a good, rather only 500.

Often seen in hunting/fishing
A quota that is binding will always:

1. cause a decrease in supply
2. raise the price
3. decrease the marginal cost (not producing the more expensive units)
4. cause deadweight loss
5. provide incentives to cheat and overproduce
Graphing Quotas

- We graph a quota as a supply curve that becomes perfectly inelastic at some point.
- Green area: deadweight loss

![Graph showing supply and demand with a quota]

- $P_{quota}$
- $P^*$
- $MC_{seller}$
- $Q^*$
- $S$ with Quota
Who Benefits From Quotas?

- Quotas raise prices, reduce surplus, and decrease supply.
- Who benefits? Sellers who get to sell under the quota.
- Notice that producer surplus, the purple region, is larger, while consumer surplus is lower.
- It is not surprising that producers frequently ask for import quotas.
Sometimes the government neither attacks price nor quantity. Rather, they pay people to produce certain goods or services, these are called **subsidies**. Frequently happen in farming. For example, peanut farmers here in Georgia are subsidized. Paid to produce and store peanuts.
A subsidy will always:
1. increase supply
2. increase quantity produced
3. reduce price
4. increase marginal cost
5. transfer money from government to those receiving the subsidy
6. cause inefficient overproduction
   - marginal social benefit of what is produced is less than the cost
   - essentially, people don’t want to pay very much for additional units of the good, but we make it anyway at a high cost
We just graph a subsidy as an increase in supply.
Why Subsidize?

- Subsidies cause deadweight loss in that they are inefficient use of resources:
  - producing goods that the market gets relatively low marginal utility out of for a high cost
- But there may be other reasons to subsidize
  - retain autonomy of key goods
  - national security, etc.
  - farming part of American heritage
- We force out farmers from other markets, hurting other economies
- whether subsidies will continue depends on how we value autonomy/heritage vs. efficiency
Takeaway Points

- Government interventions in markets cause lost surplus and inefficiency.
- However, efficiency is not the only concern of the government.
- Government is concerned with:
  - raising revenue and providing public goods
  - increasing fairness and the number of fair outcomes
  - protecting producers for various reasons
  - taxing markets as it sees fit
- We’re balancing efficiency against these other concerns.
- Balancing these is a normative question.