In this chapter, look for the answers to these questions:

- What are price ceilings and price floors? What are some examples of each?
- How do price ceilings and price floors affect market outcomes?
- How do taxes affect market outcomes? How do the effects depend on whether the tax is imposed on buyers or sellers?
- What is the incidence of a tax? What determines the incidence?

Government Policies That Alter the Private Market Outcome

- **Price controls**:  
  - **Price ceiling**: a legal maximum on the price of a good or service. Example: rent control
  - **Price floor**: a legal minimum on the price of a good or service. Example: minimum wage

- **Taxes**: The government can make buyers or sellers pay a specific amount on each unit bought/sold.

We will use the supply/demand model to see how each policy affects the market outcome (the price buyers pay, the price sellers receive, and equal quantity).

**EXAMPLE 1: The Market for Apartments**

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>$8000</td>
<td>300</td>
</tr>
</tbody>
</table>

**How Price Ceilings Affect Market Outcomes**

- A price ceiling above the equilibrium price is not binding – has no effect on the market outcome.

- The equilibrium price ($8000) is above the ceiling and therefore illegal. The ceiling is a binding constraint on the price, causing a shortage.
How Price Ceilings Affect Market Outcomes

In the long run, supply and demand are more price-elastic. So, the shortage is larger.

[Graph showing supply and demand with a price ceiling]

Shortages and Rationing

- With a shortage, sellers must ration the goods among buyers.
- Some rationing mechanisms: (1) Long lines (2) Discrimination according to sellers’ biases
- These mechanisms are often unfair, and inefficient: the goods do not necessarily go to the buyers who value them most highly.
- In contrast, when prices are not controlled, the rationing mechanism is efficient (the goods go to the buyers that value them most highly) and impersonal (and thus fair).

EXAMPLE 2: The Wages of Gov’tal Employee

[Graph showing wage of gov’t employee]

How Price Floors Affect Market Outcomes

A price floor below the eq’m price is not binding – has no effect on the market outcome.

The Minimum Wage

Min wage laws do not affect highly skilled workers. They do affect unskilled workers (like secretaries). What is the form of unemployment for governmental employees in Taiwan?

Everyone takes the exams!
**Evaluating Price Controls**

- Recall one of the Ten Principles from Chapter 1: *Markets are usually a good way to organize economic activity.*
- Prices are the signals that guide the allocation of society’s resources. This allocation is altered when policymakers restrict prices.
- Price controls often intended to help the poor, but often hurt more than help.

**Taxes**

- The govt levies taxes on many goods & services to raise revenue to pay for national defense, public schools, etc.
- The govt can make buyers or sellers pay the tax.
- The tax can be a % of the good’s price, or a specific amount for each unit sold.
- For simplicity, we analyze per-unit taxes only.
EXAMPLE 3: The Market for Pizza

Eq’m w/o tax

\[ P = 300, \quad Q = 500 \]

A Tax on Buyers

Hence, a tax on buyers shifts the \( D \) curve down by the amount of the tax.

\( P \) would have to fall by $45 to make buyers willing to buy same \( Q \) as before. 

\[ \text{E.g., if } P \text{ falls from } 300 \text{ to } 255, \text{ buyers still willing to purchase } 500 \text{ pizzas.} \]

A Tax on Sellers

The tax effectively raises sellers’ costs by $45 per pizza.

Sellers will supply 500 pizzas only if \( P \) rises to $345, to compensate for this cost increase.

Hence, a tax on sellers shifts the \( S \) curve up by the amount of the tax.

The Incidence of a Tax:

how the burden of a tax is shared among market participants

In our example, buyers pay $30 more, sellers get $15 less.
The Outcome Is the Same in Both Cases!

The effects on $P$ and $Q$, and the tax incidence are the same whether the tax is imposed on buyers or sellers!

What matters is this:

A tax drives a wedge between the price buyers pay and the price sellers receive.

$P_B = \$330$

$P_S = \$285$

The market for hotel rooms

Elasticity and Tax Incidence

CASE 1: Demand is more elastic than supply

- It’s easier for buyers than sellers to leave the market.
- Sellers bear most of the burden of the tax.

CASE 2: Demand is more elastic than supply

- It’s easier for buyers than sellers to leave the market.
- Sellers bear most of the burden of the tax.

CASE STUDY: Who Pays the Cigarette Tax?

- 2006: Taiwan’s Legislative Yuan increased the cigarette tax by $5.
- Goal of the tax: raise revenue from those who could most easily afford to pay—wealthy consumers.
- But who really pays this tax?
**CASE STUDY: Who Pays the Cigarette Tax?**

The market for cigarettes

**Demand is inelastic.**

- **Buyers’ share of tax burden**
- **Sellers’ share of tax burden**

In the short run, supply is elastic.

Hence, addicted smokers pay most of the tax.

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**CONCLUSION: Government Policies and the Allocation of Resources**

- Each of the policies in this chapter affects the allocation of society’s resources.
  - **Example 1:** A tax on pizza reduces eq’m $Q$.
    - With less production of pizza, resources (workers, ovens, cheese) will become available to other industries.
  - **Example 2:** A binding minimum wage causes a surplus of workers, a waste of resources.
  - So, it’s important for policymakers to apply such policies very carefully.

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**CHAPTER SUMMARY**

- A price ceiling is a legal maximum on the price of a good. An example is rent control. If the price ceiling is below the eq’m price, it is binding and causes a shortage.
- A price floor is a legal minimum on the price of a good. An example is the minimum wage. If the price floor is above the eq’m price, it is binding and causes a surplus. The labor surplus caused by the minimum wage is unemployment.
**Price Control**

- **Market**
- **Quantity**

**Price Control and Taxation**

- Markets are “good”?
- Price control is “bad”!

- Homework: Mankiw, Ch. 6, pp.132-133, Problem 7, 8, 10, 12, 14

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**Additional Homework Questions**

- **True or False.** A price ceiling on wheat would cause the price of bread to fall.
- **True or False.** Dell computers contain hard drives made by other manufacturers. If Dell made its own hard drives, Dell computers would be cheaper.