Chapter 1
The Big Ideas

Understand Your World

- Many of the most important issues in the world today cannot be understood without understanding economics.
- The text uses the following icon to emphasize the most important ways in which economics helps us understand the world.
Chapter Outline

1. Incentives matter
2. Good Institutions align self interest with social interest
3. Trade-offs are everywhere
4. Thinking on the margin
5. The power of trade
6. The importance of wealth and economic growth
7. Institutions matter
8. Economic booms and busts cannot be avoided but can be moderated
9. Prices rise when the government prints too much money
10. Central banking (central planning) is a hard job

The Biggest Idea of All: Economics is Fun

Introduction

- 1787—The British government hired sea captains to transport prisoners to Australia.
  - Their pay was determined by the number of prisoners transported.
  - Result:
    - As many as one third of prisoners died en route.
    - Survivors arrived starved, beaten, and ill.
- There was an outcry in Britain.
  - Newspapers editorialized.
  - Clergy appealed to the captains.
  - Parliament passed regulations.
- Result: Nothing changed.
Incentives in the Prisoner Transport Business

Only when the ship captains began to be paid per living convict on arrival did the death rate fall from over 33% to less than 1%

This situation eventually changed.

What caused it to change?

• Incentives changed – How?

This illustrates the first of ten generally accepted principles: incentives matter.

Incentives - rewards and penalties that motivate behavior.
Big Idea Two: Good Institutions Align Self Interest with the Social Interest

- When self interest aligns with the broader public interest, we get good outcomes.
  - Markets channel self-interest of millions of people.
  - Adam smith described this coordination as the “invisible hand”.
- Ways in which people acting in their self interest produce outcomes that are good for all of us are denoted by:

  See the Invisible hand

Big idea #2: Good Institutions Align Self-interest with the Social Interest

- Markets magically align your self-interest with social interest (usually)

Because the cheese-monger wants profit; you get your cheese!
Adam Smith saw the invisible hand

“It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest.”

-Adam Smith, The Wealth of Nations

Big Idea Two: Good Institutions Align Self Interest with the Social Interest

- Markets do not always align self-interest with the social interest
  - Sometimes market incentives are too strong.
    - External costs: e.g. pollution
    - Overutilization of commonly held resources (the “tragedy of the commons”)
  - Sometimes market incentives are too weak.
    - External benefits.
      - Example: Flu shots
September 2004: Merck withdrew Vioxx, an arthritis drug from the market
- Vioxx could cause strokes and heart attacks.
  - Many people demanded more testing.
  - Economists worried that approved pharmaceuticals could become too safe.

Huh? How can drugs be too safe?
- Economists consider two important trade-offs:
  - Drug lag
  - Drug loss

Trade-offs are closely related to opportunity cost.
- Opportunity cost - The value of what you give up when you make a choice.
  - Example: The biggest cost of college is forgone income.

Opportunity cost is important for two reasons…
1. Helps us evaluate trade-offs.
2. Helps us understand behavior
Big Idea Three: Trade-offs Are Everywhere

- To understand behavior, you must understand opportunity cost.
  - Application: What would you expect to happen to college enrollment during a recession?
    - The opportunity cost of going to college falls during a recession. Why?
    - The reverse is true—The opportunity cost of going to college rises when the economy is booming.
  - Prediction: college enrollments ↑ when unemployment ↑ and ↓ when unemployment ↓.

The next figure shows this is true.

Big Idea Three: Trade-offs Are Everywhere

When the Unemployment Rate Increases
The College Enrollment Rate Tends to Increase

Percentage Deviations from Trend, 1960-2000

Note: Enrollment rate of high school completers and January unemployment rate among 16-19 yr olds.
Source: National Center for Educational Statistics and Bureau of Labor Statistics
Big Idea Four: Thinking on the Margin

- Making choices by comparing the extra benefit to the extra cost of an action.
  - We engage in marginal thinking all the time.
    - Example: adjusting our speed while driving. What are the benefits and costs of driving faster or slower?

- Understanding human behavior requires looking at the trade-offs people face.

- Trade-offs usually involve choices about a little bit more or a little bit less.

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Big idea #4: Thinking on the Margin

- Actual trade-offs are usually “on the margin.”
- **Marginal** means additional
- Most economic choices are marginal choices
- E.G. Newt Gingrich wanted mandatory executions for drug dealers…
- but the effect would be to reduce the EXTRA penalty for murdering police offers during arrest

Higher punishments for lesser crimes reduce the marginal cost of harsher crimes.
Big Idea Four: Thinking on the Margin

- Application
  - Say you have graduated and are earning $64,000 a year.
  - You are offered another job at a higher salary, but it’s in a different city and you don’t want to move.
  - Should you take the job?
    - Depends on…
      - How much of the additional income you get to keep after taxes (marginal benefit).
      - What you give up to move i.e. friends, family, lower cost of living (marginal cost)

Big Idea Five: The Power of Trade

- Both people involved in voluntary exchange are better off.
- The power to increase production through specialization.
  - Why is it unlikely that Martha Stewart irons her own clothes even though she is likely very good at ironing?
  - Specialization is important for countries as well as individuals.
- Allows us to take advantage of economies of scale.
Big Idea Six: The Importance of Wealth and Economic Growth

- 2007—more than half a billion people contracted malaria.
  - About a million—mostly children—died.
  - Malaria was once common in the U.S..
    - Wealth ended it

- Lesson: Wealthier countries have...
  - Lowest infant mortality rates.
  - Greatest access to sanitation facilities, antibiotics, education, fulfilling jobs and careers.

- In short: Wealth matters..understanding economic growth is crucial

Hans Rosling's famous lectures combine enormous quantities of public data with a sport's commentator's style to reveal the story of the world's past, present and future development. (4:48 minutes)

http://www.youtube.com/watch?v=jbkSRLYSjo
Big Idea Seven: Institutions Matter

- What makes a country rich?
  - Most proximate causes:
    - large amounts of physical and human capital.
    - Things are produced in a relatively efficient manner.
    - Use of the latest technological knowledge.

- Why do some countries have more physical and human capital organized well using the latest technology?
- Answer: Differences in incentives.

Big Idea Seven: Institutions Matter

- How do incentives help create wealth?
  - Entrepreneurs, investors, and savers need incentives to save and invest

  Important institutions that support good incentives are...
  - property rights,
  - political stability,
  - honest government,
  - dependable legal system,
  - competitive and open markets.
Can you tell which country has better institutions?

Big Idea Seven: Institutions Matter

- South and North Korea were equally poor in 1950.
  - South Korea - modern developed country with per capita income 10 times greater than North Korea’s.
  - North Korea - starvation is common and people can go months without eating meat.
  - They share the same language and culture and historical background. What’s the difference?
    - Their economic systems and incentives
Big Idea Seven: Institutions Matter

- Macroeconomists are especially interested in the incentives to produce new ideas.
  - New ideas are the lifeblood of economic growth.
  - Without new ideas standards of living worldwide will stagnate.
- Ideas have peculiar properties
  - Ideas can be shared without limit.
    - One apple feeds one man; one idea can feed the world.
  - Ideas are not used up.

Big Idea Eight: Economic Booms and Busts Cannot be Avoided but Can Be Moderated

- No economy grows at a constant pace.
  - Booms and busts are part of the normal response of an economy to changing economic conditions.
- Not all booms and busts are normal.
  - The Great Depression was not normal.
    - National output fell by 30 percent.
    - Unemployment exceeded 20 percent.
    - Stock market fell to less than a third of its original value.
  - The Great Depression did not have to happen.
    - Most economists believe that appropriate monetary and fiscal policy could have made it shorter and less deep.
    - Monetary and fiscal policies were not well understood at the time.
Today, monetary and fiscal policy are much better understood.
  • When used appropriately, they can reduce swings in unemployment and GDP.
  • When used poorly, they can make recessions worse and the economy more volatile.

Significant task of macroeconomic theory.
  • To understand the promise and limits of monetary and fiscal policy.

Big Idea Nine: Prices Rise When the Government Prints Too Much Money

- Inflation - an ↑ in the general level of prices.
  • One of the most common problems of macroeconomics.

- Inflation is caused by a sustained increase in the money supply.
  • In the U.S. the money supply is controlled by the Federal reserve.
    ▪ Low inflation since the early 1980s is a testament to successful Fed policy.
  • In Zimbabwe the government was printing money so rapidly that in 2009 prices were rising by billions of percent per month!
Big idea #10: *Central Banking Is a Hard Job*

- The Federal Reserve is the U.S.’s central bank.
- “The Fed” is in charge of money supply
  - Helping the economy be stable
  - Balancing inflation and unemployment
  - Preventing banking crises?

Ben Bernanke, Chairman of the Fed, wondering where the nearest aspirin supply is.

Big Idea Ten: Central Banking Is a Hard Job

- The Federal Reserve Bank (“the Fed”) is often called on to combat inflation.
  - A challenge because there is a lag between when the Fed makes a decision and when the effects of the decision on the economy are known.
  - It is difficult to make the right guess about where the economy is going.
    - If the Fed gets it wrong, it can make things worse.
  - It is wise to think of the Fed as a highly fallible institution that faces a very difficult job.
The Biggest Idea of All: Economics is Fun

- It teaches us how to make the world a better place.
- It’s about the difference between…
  - Wealth and poverty,
  - Work and unemployment,
  - Happiness and squalor.
- Increases our understanding of the distant past, present events, and future possibilities.
- It is linked to everyday life.
  - Job
  - Finances
  - How to deal with economic events like inflation, recession, or a bursting stock market bubble.

End of Chapter 1

Second Edition

Tyler Cowen • Alex Tabarrok
Chapter 2
The Power of Trade and Comparative Advantage

Milton Friedman’s Pencil

Published on Jul 31, 2012
Milton Friedman discusses the market forces involved in creating a single pencil.
Chapter Outline

- Trade and preferences
- Specialization, productivity, and the division of knowledge
- Comparative advantage
- Trade and globalization

Introduction

- How is it that farmers in New Zealand wake up at 5 AM to provide you with a Kiwi for your fruit salad?
- Answer: Economic cooperation resulting from trade.
- We focus on three benefits of trade
  1. Trade makes people better off.
  2. Trade increases productivity - specialization
  3. Trade increases productivity - comparative advantage.

Let’s look at these in turn.
Why We Trade

- **Three benefits of trade**
  1. Trade makes people better off when preferences (or opportunities) differ.
  2. Trade increases productivity through specialization and the division of knowledge.
  3. Trade increases productivity through specialization according to comparative advantage.

1. Trade and Preferences
2. Specialization, Productivity, and the Division of Knowledge

- True power of trade: specialization
- Reinforcing cycle
  - Trade allows specialization.
  - Specialization increases productivity and trade.
- Why does trade increase productivity?
  - Trade Increases availability of knowledge.
  - Knowledge increases productivity.
    - In a modern economy, more knowledge is used that could exist in a single brain.

2. Specialization, Productivity, and the Division of Knowledge

- Division of knowledge increases as a market grows.
- Modern growth is mainly due to new knowledge.
- Important turning point:
  - Trade is sufficient to support large numbers of scientists, engineers, and entrepreneurs
- Increase in world trade can lead to an increase the division of knowledge.
  - Fall of the Berlin Wall
  - Opening of China, Russia, and Europe.
Comparative Advantage

- **Comparative advantage** – the ability of a country to produce a good at lower opportunity cost than another country.

- **Absolute advantage** - the ability of a country to produce a good using fewer inputs than another country.
  - A country need not have an absolute advantage in anything to benefit from trade.

- To understand why, we need to understand the principle of **comparative advantage**.

*Warning! Understanding comparative advantage takes effort.*

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Why Absolute Advantage Doesn’t Matter

Just because a person or country can produce more of a good than others doesn’t necessarily mean it can produce the good cheaper.

Even very productive countries gain when they import cheaper goods (instead of being self-sufficient).
Martha Stewart probably hires housecleaners…. Every hour she spends cleaning (instead of writing about how to keep a clean house) is an hour she doesn’t spend running her empire.

Comparative Advantage

- The Production Possibility Frontier (PPF)
  - PPF shows all the combinations of goods that a country can produce given:
    - Productivity
    - Supply of inputs
  - A convenient tool to understand opportunity cost and comparative advantage.

Let’s apply this tool using an example.
Suppose

- in Mexico it requires:
  - 2 units of labor to produce 1 shirt.
  - 12 units of labor to produce 1 computer.
- in the U.S. it requires:
  - 1 unit of labor to produce 1 shirt.
  - 1 unit of labor to produce 1 computer.
- Both countries have 24 units of labor each.

*These data are reflected in following tables.*

The U.S. has an absolute advantage in the production of both goods.

PPF curves can be derived from this data.
Production Possibilities for Mexico and U.S. w/o Trade

<table>
<thead>
<tr>
<th>Computers</th>
<th>Shirts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>1</td>
</tr>
<tr>
<td>United States</td>
<td>12</td>
</tr>
<tr>
<td>Total Production</td>
<td>13</td>
</tr>
</tbody>
</table>

Note:
1. The U.S. has an absolute advantage in both goods.

Opportunity Costs and Comparative Advantage

- Now suppose that Mexico and the U.S. devote 12 units of labor to the production of each good.
Production Possibilities for Mexico and U.S. w/o Trade

- No trade: production = Consumption

Note:
1. The U.S. has an absolute advantage in both goods.
2. Each country consumes what they produce.

Opportunity Costs and Comparative Advantage

<table>
<thead>
<tr>
<th>Country</th>
<th>Opportunity cost of 1 computer</th>
<th>Opportunity cost of 1 Shirt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>6 shirts</td>
<td>1/6 of a computer</td>
</tr>
<tr>
<td>United States</td>
<td>1 shirt</td>
<td>1 computer</td>
</tr>
</tbody>
</table>

- Mexico has a comparative advantage in shirts.
- U.S. has a comparative advantage in computers
Production Possibilities for Mexico and U.S. w/o Trade

Mexico United States

Shirts have lower opportunity Cost in Mexico.

No trade: production = Consumption

Shirts

Computers

United States

Computers have lower opportunity Cost in the U.S.

No trade: production = Consumption

Theory of comparative advantage

- A country can increase its wealth by...
  - Specializing in producing goods for which it has a comparative advantage
  - Trading for the goods for which it does not have a comparative advantage.

Let’s continue with our example.
Opportunity Costs and Comparative Advantage

- Suppose that Mexico specializes completely in shirts.
- U.S. partially specializes partially by producing 14 computers and 10 shirts.

<table>
<thead>
<tr>
<th>Country</th>
<th>Computers</th>
<th>Shirts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>United States</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Total Production</td>
<td>14</td>
<td>22</td>
</tr>
</tbody>
</table>

Production in Mexico and U.S. (Specialization)

With trade the price of both goods will be equal. (assume 1 computer = 3 shirts).
Assume Mexico now consumes 9 shirts and trades the remaining 3 for 1 computer.
Assume the U.S. consumes 13 computers and trades the remaining computers for 3 shirts.

<table>
<thead>
<tr>
<th>Country</th>
<th>Computers</th>
<th>Shirts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>0+1=1</td>
<td>12-3=9</td>
</tr>
<tr>
<td>United States</td>
<td>14-1=13</td>
<td>10+3=13</td>
</tr>
<tr>
<td>Total Production</td>
<td>14</td>
<td>22</td>
</tr>
</tbody>
</table>

Consumption in Mexico and U.S. (Specialization and Trade)

We can now compare trade with no trade using our PPC.
Opportunity Costs and Comparative Advantage

Conclusions:
- Both Mexico and the U.S. gain from trade.
  - True even though the U.S. has an absolute advantage in both computers and shirts.
  - Why?
    - By specializing in goods in which they have a comparative advantage, each country is using their resources more efficiently.
- Both high productivity and low productivity have some comparative advantage.
  - All countries can benefit from trade.
Comparative Advantage and Wages

- Wages are included in the model
  - Example:
    - Wage rate = Consumption/number of workers
    - Suppose \( P_{\text{shirt}} = \$100 \) and \( P_{\text{computer}} = \$300 \)

  \[
  \text{Wage rate} = \frac{\text{Consumption}}{\text{number of workers}}
  \]

  Suppose \( P_{\text{shirt}} = \$100 \) and \( P_{\text{computer}} = \$300 \)

  Conclusion: With trade, wages are higher for both countries!

### Comparative Advantage and Wages

- Some Important Points:
  - The wage in Mexico is lower than the wage in the U.S. before and after trade.
    - Why? - Productivity of labor is lower in Mexico.
  - The increase in wages resulting from specialization and trade is limited by productivity.
  - Conclusion: Ultimately wages are determined by productivity.
“It is the maxim of every prudent master of a family never to attempt to make at home what it will cost him more to make than to buy. The tailor does not attempt to make his own shoes, but buys them of the shoemaker. ... If a foreign country can supply us with a commodity cheaper than we ourselves can make it, better buy it of them with some part of the produce of our own industry employed in a way in which we have some advantage.” – Adam Smith

Trade and Globalization

- **Globalization** - the advance of human progress across national boundaries.

- **Not new**
  - Roman Empire – Knit together large parts of the world.
  - “Dark ages” – Trade networks collapsed when the empire fell.
  - European Renaissance arose from revitalized trade routes.
The Takeaway

- Power of trade occurs when it leads to specialization.
- Specialization leads to increased productivity.
- Specialization and trade...
  - leads to more available knowledge.
  - allows taking advantage of economies of scale.
  - Increases competition
  - Theory of comparative advantage explains how trade can benefit both trading partners.

End of Chapter 2
Chapter 3
Supply and Demand

Introduction

- Most important tools in economics:
  - Supply
  - Demand
  - Equilibrium
- Oil market: arguably the most important market in the world.
- We will learn to use these tools in the context of the oil market.
The Demand Curve for Oil

- **Demand curve** – a function that shows the quantity demanded at different prices.
- **Quantity demanded** – the quantity that buyers are willing and able to buy at a particular price.
- Let’s look at a hypothetical demand curve for oil.
The Demand Curve for Oil

Demand Curves are read two ways:
1. **Horizontally** – At a given price how much are people willing to buy?
2. **Vertically** – What are people willing to pay for a given quantity?

![Demand Curve Diagram]

Why Is the Demand Curve Downward Sloping?

- **Oil is not equally valuable in all its uses.**
  - If the price of oil is high, it is used in only higher valued uses.
    - Air Force One
    - Commuting
  - If the price of oil is low, it can be used also in lower valued uses.
    - Manufacture “rubber duckies”
    - Sight seeing
Why Is the Demand Curve Downward Sloping?

Price of oil/barrel

$40

$20

$5

0 5 25 50 Quantity of Oil (MBD)

Law of Demand: ↑ price → ↓ quantity demanded

Higher valued uses

Lower valued uses

Demand

Consumer Surplus

- Consumer surplus
  - The consumer’s gains from exchange, or,…
  - The difference between the maximum price the consumer is willing to pay and the market price.

- Total consumer surplus
  - Measured by the area below the demand curve and above the market price.

Let's use the demand curve for oil to show these concepts.
Suppose the market price is $20. If the demand curve is linear, measuring consumer surplus is easy.

**Consumer Surplus**

- President’s consumer surplus
- Delta Airlines consumer surplus
- Frank’s (retiree) consumer surplus

Total Consumer Surplus

If the demand curve is linear, measuring consumer surplus is easy.
What Shifts the Demand Curve?

- **Increase in demand** - shifts the demand curve to the right.
  - At the same price people are willing to buy more.
  - At the same quantity, people are willing to pay a higher price.

- **Decrease in demand** – shifts the demand curve to the left.
  - At the same price people are willing to buy less.
  - At the same quantity, people are willing to pay a lower price.

*Both of these can be shown in the following diagrams.*
Shifting the Demand Curve

**An Increase in Demand**
- Willing to pay a higher price for the same quantity.
- Willing to buy more at the same price.

**An Decrease in Demand**
- Willing to buy less at the same price.
- Willing to pay a lower price for the same quantity.
What Shifts the Demand Curve?

- **Important Demand Shifters**
  1. Income
     - Normal goods
     - Inferior goods
  2. Population
  3. Price of substitutes
  4. Price of complements
  5. Expectations
  6. Tastes

  *Let’s look at each of these in turn.*

Demand Shifter: Income

- **Normal good** – demand ↑ when income ↑
  - Example: As income increases in India, many people will buy their first car. This increases the demand for oil.

- **Inferior good** – demand ↓ when income ↑
  - Example: As college students graduate, and their incomes increase they eat less ramen noodles.

*Let’s illustrate each of these with the demand curve.*
### Demand Shifter: Population

- **Increase in population** → ↑ number of consumers → ↑ demand.
- **Demographic changes** – some subpopulations increase faster than others.
  - **Examples**
    - The average age gets older. (e.g. the U.S.)
    - The average age gets younger. (many developing countries)
  - **Result:** as average income grows, the demand for some categories of goods increases faster.

### Demand Shifter: Price of Substitutes

- **Substitute goods** – those than can be used as alternatives for the other.
- **Decrease in the price of a substitute** → ↓ demand for a good.
  - **Examples:**
    - ↓ price of natural gas → ↓ demand for petroleum.
    - ↓ price of coffee → ↓ demand for tea.
    - ↓ price of Toyota cars → ↓ demand for Ford cars.
Demand Shifter: Price Complements

- **Complements** – goods that are used together
- Decrease in the price of a complement → ↑ demand for a good.
  - Examples:
    - ↓ price of computer software → ↑ demand for computers.
    - ↓ price of cars → ↑ demand for gasoline.
    - ↓ price of hamburger → ↑ demand for hamburger buns.

Demand Shifter: Expectations

- Expectation of the future price of a good will shift the demand curve for that good.
  - Expected higher price → ↑ demand.
  - Expected lower price → ↓ demand.
- Examples:
  - Trouble in the Middle East → higher expected price of oil → ↑ **current** demand for oil.
  - News of a spring freeze in Florida → higher expected price of oranges → ↑ **current** demand for oranges.
Demand Shifter: Tastes

- Changes in tastes shift demand curves all of the time.
  - Examples
    - Fad diets that advocate eating mostly protein → ↑ demand for beef.
    - People desire to have a lower “carbon footprint” → ↑ demand for hybrid cars.
    - Social stigma for wearing real animal fur → ↓ demand for fur coats.

What Shifts the Demand Curve?

- A “change in quantity demanded” is NOT the same as a “change in demand.”
  - “Quantity demanded” changes only when the price of a good changes.
    - It is a movement along a fixed demand curve.
  - “Demand” changes only when a non-price factor (demand shifter) changes.
    - It is a shift in the entire demand curve.
The Supply Curve for Oil

- **Supply curve** – a function that shows the quantity supplied at different prices.
- **Quantity Supplied** – the amount of a good that sellers are willing and able to sell at a particular price.

*The next diagram shows a hypothetical supply curve.*
Supply Curves

Why is the supply curve *upward sloping*?

- The cost of producing a good is not equal across all suppliers.
  - At a low price, a good is produced and sold only by the lowest cost suppliers.
  - At a high price, a good is also produced and sold by higher cost suppliers.
The Supply Curve for Oil

- Why is the supply curve for oil upward sloping?
  - Not all oil costs the same to lift to the surface.
    - Saudi Arabia - $2.00 per barrel
    - Iran & Iraq - $2.00 plus a bit more
    - Nigeria and Russia - $5 to $7 per barrel
    - Alaska - $10 per barrel
    - North Sea - $12 per barrel.
    - Canada's tar sands - $22.50 per barrel
    - U.S. - $27.50 per barrel
    - Oklahoma oil shale - $40

Let's see what this looks like in a supply curve.
Producer Surplus

- **Producer surplus**
  - The producer’s gain from exchange
  - The difference between the minimum price the seller is willing to accept and the market price.

- **Total producer surplus**
  - Measured by the area above the supply curve and below the market price.

Let’s use the supply curve for oil to show these concepts.

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![Producer Surplus Diagram](image)

- Total producer surplus at a price of $40
What Shifts the Supply Curve?

- Increase in Supply - shifts the supply curve to the right.
  - At the same price producers are willing to sell more.
  - At the same quantity, producers are willing to accept a lower price.
- Decrease in supply – shifts the supply curve to the left.
  - At the same price sellers will offer less.
  - At the same quantity, sellers demand a higher price.

Both of these can be shown in the following diagrams.

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**Diagram 1:**
- **Price of oil/barrel**
- **Quantity of Oil (MBD)**
- **Old supply**
- **New supply**
- Increase in supply
- Willing to accept a lower price for the same quantity
- Greater quantity supplied at the same price
What Shifts the Supply Curve?

General rule: Cost changes shift the supply curve
- ↑ cost → supply curve shifts left (higher P)
- ↓ cost → supply curve shifts right (lower P)

Important Supply Shifters
1. Technological innovations and changes in the prices of inputs
2. Taxes and subsidies
3. Expectations
4. Entry and exit from the industry
5. Changes in opportunity costs

Let’s look at these supply shifters in turn.
Supply Shifter: Technological Innovations and Changes in Price of Inputs

- Improvement in technology
  - Results in lower cost to produce the same output.
    - Example: sidewise drilling.
- Changes in prices of inputs
  - Increased labor costs
    - Higher wages
    - Higher payroll taxes
    - Higher cost of mandatory health insurance.
  - Increased capital and materials costs
    - Higher interest rates
    - Higher energy costs

Supply Shifter: Taxes and Subsidies

- Taxes on commodities and services
  - Higher tax is considered an increase in cost.
- Subsidy
  - Same as a negative tax
  - Considered a decrease in cost

*It is easier to see this if we use a diagram.*
Effect of a Tax on the Supply Curve of Oil

Price of oil/barrel

Sellers require a $10 higher price to sell the same quantity

$50

40

0

0 20 40 60 80 100

Quantity of Oil (MBD)

Old supply

New supply

$10

Tax = $10/barrel

Note: A subsidy of $10 per barrel would have the opposite effect.

Taxes and Subsidies

- Taxes and subsidies affect profits and therefore supply.
- A 10% yacht tax reduced the supply of yachts 53% in the early 1990s.
Supply Shifter: Expectations

- What sellers think the price of their product will be in the future can have a dramatic effect on current supply.
  - Examples
    - War in Middle East → ↑ expected prices of oil.
    - Frost in Florida → ↑ expected price of orange juice.
    - Favorable rains in mid-west → ↓ expected price of wheat
  - Higher expected prices → Decreased supply
  - Lower expected prices → Increased supply
Supply Shifter: Entry or Exit of Producers

- This one’s easy: ↑ producers → increase supply
  - NAFTA resulted in Canadian firms entering the U.S. lumber market
  - When patents expire more firms enter an industry
- Net entry into a market → Increased supply
- Net exit from a market → Decreased supply

Let’s look at each of the examples in turn.

Supply Shifter: Entry or Exit of Producers

**Entry Increases Supply**

- Greater Quantity Supplied at the Same Price
- Domestic Supply Plus Canadian Imports
- Lower Price for the Same Quantity Supplied

Quantity
Supply Shifter: Entry or Exit of Producers

- Patent On a Medicine Expires

<table>
<thead>
<tr>
<th>Price/dose</th>
<th>New supply</th>
<th>Old supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.50</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quantity of Doses (millions)</th>
<th>Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

Higher quantity at the same price

Supply Shifter: Opportunity Costs

- Opportunity cost applied to supply
  - Suppose producers can produce alternative products
    - ↑ price of the alternative → ↑ opportunity cost of producing the good.
    - Example
      - A farmer producing soybeans could also grow wheat.
      - An increase in the price of wheat → ↑opportunity cost of soy beans
  - ↑ opportunity cost → ↓ supply
Supply Shifter: Opportunity Costs

- Effect of an increase in the price of wheat

<table>
<thead>
<tr>
<th>Price of soybeans/bushel</th>
<th>Quantity of soybeans (millions of bushels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$7</td>
<td>2,000</td>
</tr>
<tr>
<td>5</td>
<td>2,800</td>
</tr>
</tbody>
</table>

Higher price required to sell the same quantity
Lower quantity at the same price

Takeaway

- A demand curve shows the quantity demanded at different prices.
- A supply curve shows the quantity supplied at different prices.
- You should be able to define and show how consumer surplus and producer surplus are measured.
- You should know what shifts the demand and supply curves and which direction.
End of Chapter 3