AP Macroeconomics Notes

Franklin Chen

22 Feburary 2024 - 21 May 2025

Contents

1 Intro to Economics

Corresponds to Chapter 2: "The Discipline of Economics."

1.1 What is Economics?

Definition 1 (Economics)**.** The study of resources and how to optimally use resources. Often to answer the question "Should we do A or B with this limited resource?"

In this context, the word "resource" has a specific meaning.

Definition 2 (Resource)**.** Anything that can be used to produce a good or service. Every resoruce is classified into one of three categories:

- **Land**: natural resources. (Eg. crude oil, farmland, oceans)
- **Labor**: work people do to produce goods and services. (Eg. physical labor like building or sports, mental labor like professors)
- **Capital**: equipment used to produce goods or more resources. (Eg. factories, computers)

Economics is broken into two fields: **microeconomics** and **macroeconomics**.

Definition 3 (Microeconomics)**.** The study of economic problems faced at the individual level; individuals, families, and firms. Eg. "does this particular family save enough to provide for its future needs?"

Definition 4 (Macroeconomics)**.** The study of economics problems faced at the national level; states, countries, and internationally. Eg. "should we allocate resources from national defense to education?"

Sometimes, we may discuss **positive economics**: the scientific analysis of economics via the hypothesis-test-conclusion model. Alternatively, we may discuss **normative economics**: the ethical analysis of economics- the way things *should* be.

1.2 Opportunity Cost and the PPF

Definition 5 (Opportunity Cost)**.** The potential benefit lost from choosing one alternative over the other. For example, when you spend two hours studying, you lose two hours of relaxation. Gains of the option not chosen - gains of the opportunity chosen = opportunity cost.

In macroeconomics, opportunity cost is often quantative. If a nation decides to spend more resources to produce a good A, they will "lose" the good B that could have been produced with the same resources.

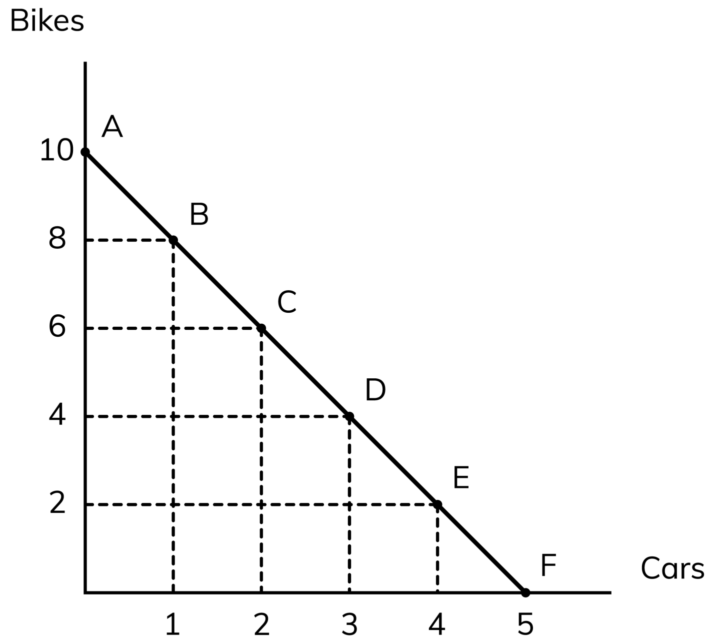


Figure 1: A Production Possibilties Frontier (PPF) showing a hypothetical nation's possible production of bikes and cars.

For example, consider Figure 1. In this case:

$$\text{Opportunity Cost of Bikes} = \frac{\text{Change in Car Production}}{\text{Change in Bike Production}} = 0.5\text{cars/bike}$$

The opporutnity cost of cars is the reciproical of the opportunity cost of bikes: that is, 2 bikes/car.

Figure 1 is a **production possibilties frontier**: it shows all the combinations of the goods that can be produced if the economy uses all of its resources fully and **efficently** (to their maximum potential). *All points on the curve are optimal; a normative analysis is required to determine what point is preferred.*

Points "inside" the PPF are possible, but aren't optimal. (This may occur due to environmental, labor or other restrictions.) Points "outside" the PPF are currently impossible: resources can't be used efficently enough to reach that point.

The PPF may shift for two primary reasons: changes in the *amount of resources* or *productivity/technology*. Increasing the amount of resources or improving technology used to produced said resources would shift the PPF to the right. Similarly, decreasing the amount of resources or somehow regressing in technology (war/disaster) would shift the PPF to the left.

1.3 Laws of Costs

Often, PPFs aren't straight lines; the opportunity cost varies depending on the current amount being produced. More often, the opportunity cost of each extra product increases per product already produced. Graphically, this causes a PPF concave to the origin. This is known as **the law of increasing costs**.

Generally, the law of increasing costs happens as people less and less in tune with producing a good are hired to produce it.

Alternatively, the inverse may happen: the opportunity cost of each extra product may decrease per product already produced. This may happen as more infrastructure is put into place, it takes less resources to produce each unit good. This causes a PPF convex to the origin, and is known as **the law of decreasing costs**.

1.4 Absolute and Comparitive Advantage

Definition 6 (Specialization)**.** When an entity focuses on the production of a limited scope of goods for greater efficency.

It can be shown that dividing labor into specialized tasks could increase productivity and output, *even at the national scale.*

Production per unit of Labor:		
	China	Argentina
Food	200	20
Cloth	100	80

Figure 2: A hypothetical example of production costs of food and cloth in China and Argentina.

Consider Figure 2. In this case, China has the **absolute advantage** in both food and cloth because China can produce both more efficently than

Argentina. However, Argentina has the **comparitive advantage** in cloth, because it has a lower opportunity cost (0.25 food/cloth vs. 2 food/cloth). Similarly, China has the comparitive advantage in food (0.5 cloth/food vs. 4 cloth/food). It can be shown that by specializing in the good a nation has a competitive advantage of, the maximal amount of goods will be produced between the two nations.

Supposing that countries only produce their competitive advantage good, an optimal trading ratio to benefit both countries can be found by considering opportunity cost. Trading x units of food for y units of cloth would be optimal if x/y is less than the opportunity cost of cloth in China (2 food/cloth) and y/x is less than the opportuntiy cost of food in Argentina (4 food/cloth). For example, trading 1 unit of food per 1 unit of cloth would benefit both countries, as it is less than both of the countries' individual opportunity costs.

2 Economic Systems

Corresponds to Chapter 3: "Economic Systems."

Economics deals with three primary problems:

- How much, if any, of each good and service should be produced?
- Who will get how much of each good and service?
- How should these goods and services be distributed?

While these problems may be easy to answer for small systems, these problems become exponentially harder to deal with as the size of the economy grows. Note the idea of opportunity cost (producing something will reduce production of other products) and *related costs*: producing more of a product will require more production of capital.

For example, producing more food may take away money from the cosmetic industry; opportunity cost; and require the production of more tractors and farm equipment; related costs.

Societies tackle this problem in three ways: **command economies**, **capitalism**, or a mix of the two. These can be viewed as a spectrum: command economies on one end, and capitalism on the other.

2.1 Command Economies

Definition 7 (Command Economy)**.** Also referred to as "communism" or "socialism." An economy in which the government determines what will be produced, how much will be produced, and who recieves the products.

Command economies use quotas and production plans to dictate how much of each good or resource is produced. By setting prices on goods and services and controlling the wage rates of almost all citizens, the government is able to control the access to products.

Due to how interconnected individual goods and services are with one another, it is nearly impossible to perfectly coordinate production requirements. Many quotas may fail if a "requirement" quota fails to be met. Additionally, incentives to work hard and innovate are discouraged, as there is little benefit for doing so.

However, command economies can also artificially change prices; ex. artificially lowering the price of textbooks to encourage education. Additionally, fixed wages can eliminate the lower class.

Two examples of countries with command economies are Cuba and North Korea.

2.2 Capitalism

Definition 8 (Capitalism)**.** Economic system where supply and demand determine prices.

In a capitalist economy, the **consumer** dictates the production of goods. For example, if consumers want more of a certain product, the purchases of that product will go up. This signals to producers to increase the production of that product (often cutting something else in the process).

An individual's income determines how much of the net production they will recieve. Income is also another variable within such an economy (the price of labor).

In a purely capitalist economy, the government has no direct influence. However, in practice, no country is purely capitalist: the government often needs to step in when the economy won't equitably provide important resources, like food or higher education.

2.2.1 Allocative Efficency

Definition 9 (Allocative Efficency, the "invisible hand")**.** When resources are deployed to produce just the right amount of products to satisfy society's wants.

When prices are determined by a capitalist economy, **allocative efficency** is achieved. The capitalist economy is able to answer the critical questions of economics in a *decentralized* way (with no ruling body). Products and quantity are determined by the consumer, as mentioned before. Who recieves goods is also answered, as the price of labor will reward those who appeal to consumer wants.

2.3 The Circular Flow Diagram

In capitalist economies, most of the resources are "owned" by individuals and households; via stockholders "owning" companies and government facilites being "owned" by everybody.

Definition 10 (Market)**.** A mechanism that allows buyers and sellers to exchange a good or service.

The **circular flow diagram** (3) shows how resources are flow from households to firms in exchange for wages. This trade of resources for money is known as the *market for resources* or *factor market.* Households spend their income to purchase goods and services supplied by firms: the *market for goods and services* or *product market.*

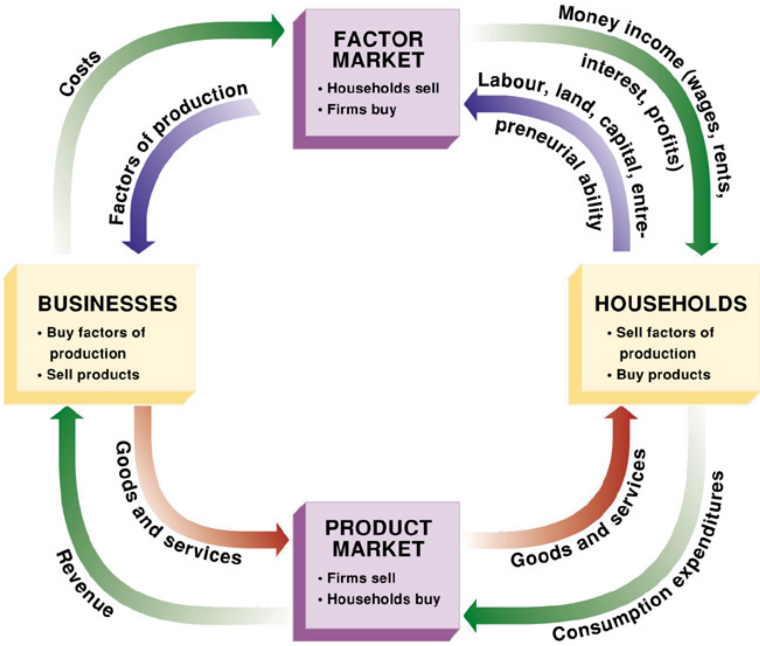


Figure 3: The Circular Flow Diagram.

3 Supply and Demand

Correpsonds to Chapter 4: "Demand and Supply: The Basics."

3.1 Demand

Definition 11 (Demand)**.** The quantity of a product a consumer is willing and able to purchase at each and every prices. The demand for a product is shown graphically as a demand curve.

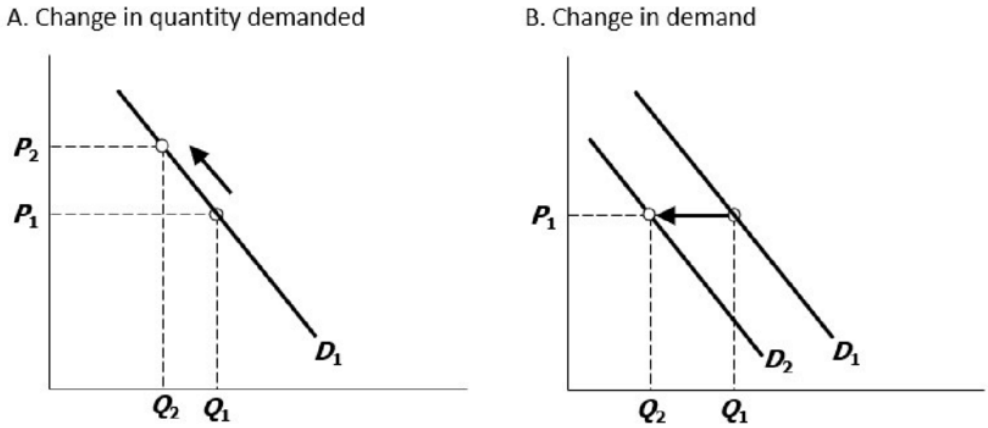
Definition 12 (Law of Demand)**.** Holding all else equal (*ceteris paribus*), if the price of a product increases, the quantity demanded decreases and vice versa. Equivelently, the slope of a demand curve is always negative.

There are three major reasons for why the Law of Demand happens:

1. **The Income Effect**: When prices fall, consumers can afford to buy more of a product, and vice versa. The *purchasing* power of the consumer decreases as the prices increase.

2. **The Substitution Effect**: If a substitute for a good exists, an increase in price for the good will lead to more demand for the alternative and thus less demand for the original good.

3. **Diminishing Marginal Utility**: As more units of a product are "consumed" the *utility* or satisfaction from each individual product decreases. As utility decerases, so does the price the consumer is willing to pay.



Notes: Both panels show a typical water demand curve, with quantity (Q) on the x-axis and price (P) on the y-axis. Panel (A) illustrates how rate increases cause a movement up along the demand curve. Panel (B) illustrates how non-price changes (such as wet weather or installation of water efficient appliances) cause a shift of the demand curve to the left.

Figure 4: Demand curves.

3.1.1 Changes in Demand and Quantity Demanded

Definition 13 (Quantity Demanded)**.** The quantity of a product demanded at **one** specific price. When **only the price** of a product changes, the quantity demanded will change. This is the movement of a point along a **constant** demand curve.

An increase in demand leads to a shift to the right, VV.

On the other hand, if the **determinants of demand** change, then the demand curve *will* shift the curve to the left or right. The determinants of demand are as follows:

Substitute Goods are two goods that are interchangable- see the substitution effect. When the price of the original good goes up, the quantity demanded for the original good decreases and the demand *curve* of the substitute good will go outwards, thus resulting in a shifted quantity demanded.

Preferences refer to consumers' tastes or preferences for a good or service. If people's desire for a product increase, then the demand curve will shift to the right, and vice versa.

Population refers to the total number of buyers in a specific market. Bigger market = more demand = shift to the right.

If a consumer's **income** increases, their demand for all products will generally increase. Most goods are *normal goods* (income increases = demand for good increases), but some may be *inferior goods* (income increases = less demand). Think of normal goods like superior proudcts (new car, new clothes) and inferior goods like poor products (used cars, second-hand clothes).

Complementary Goods are goods that are purchased seperately but used together. When the demand for the original good goes up, so will the demand for the complementary good, and vice versa. Like the opposite of substitue goods.

Expectations of higher prices will increase the current demand before the price increases.

Remember the acronym SPICE:

- **S**ubstitute Goods
- **P**references and **P**opulation
- **I**ncome
- **C**omplementary goods
- **E**xpectations

3.2 Supply

Similar to consumers, suppliers also have their own **supply** curves.

Definition 14 (Supply)**.** The quantity of product a supplier is willing and able to produce or put on sale at each and every price. The supply for a product is shown graphically as a supply curve.

Definition 15 (Law of Supply)**.** Ceteris paribus, if the price of a product increases, the quantity of product a supplier is willing to provide increases. Equivelently, the slope of a supply curve is always positive.

The Law of Supply happens for two major reasons:

1. Greater price = more profit. yeah thats it
2. As producers increase production, the marginal cost of producing each product increases, requiring higher prices to justify producing a higher quantity of product.

3.2.1 Changes in Supply and Quantity Supplied

Definition 16 (Quantity Supplied)**.** The quantity of a product produced at **one** specific price. When **only the price** of a product changes the quantity produced will change. This is the movement of a point along a **constant** supply curve.

Yet again, there exist **determinants of supply**. Note, in this case, an increase in supply would lead to a *shift to the right*- more quantity for less price. VV. The determinants of supply are as follows:

Resource costs and availability: when the cost of producing a product increases, the supply of that product will decrease, VV. When one of the resources (land, labor, capital) used in production changes in price, supply will change.

Alternative Prices: sometiems, a firm can easily switch between several different products. In some cases, it may be better to produce more of another product to maximize profit. Thus, the prices of alternative prices will affect the supply of both.

New **technology** can decrease production costs and increase productivity, resulting in greater supply.

Taxes on the production of a good will result in increased production costs, decreasing supply. Alternatively, a **subsidy**- payment from the government to produce a product- will increase profits at all levels and increase supply.

Similar to consumers, if producers **expect** higher prices in the future, they may hold back the amount produced, decreasing current supply for the ultimate goal of increasing profits in the future. VV.

A greater **number of sellers** increases net supply. While the extra competition may decrease the supply for an individual seller, the result is a greater supply overall. This is usually good for consumers, who recieve more choice and lower prices as the suppy curve shifts to the right.

Remember the acronym ROTTEN:

- **R**esource costs and Availability
- **O**ther good's prices
- **T**ncome
- **T**axes and Subsidies
- **E**xpectations
- **N**umber of sellers

3.3 Market Equilibrium

At the point where the supply and demand curve intersects, there exists **market equilibrium**: consumers want the exact amount that producers want to produce. This is also known as the *market-clearing price.* Otherwise, there is **disequilibrium**: the market is sub-optimal for consumers and producers.

A **surplus** exists if supply outweighs demand, resulting in lower prices and thus lower supply. A **shortage** exists if demand outweighs supply, resulting in higher prices and thus higher supply. In a perfectly competitive market, both scenarios will eventually converge back to equilibrium.

3.3.1 Changes in Equilibrium

Questions may ask about an equilibrium price after a supply and/or demand shift.

To solve these, first consider what curve the shift is affecting: supply, demand, or both? Then, consider whether if it is an increase (right) or decrease (left), and then shift the curve, noting the new equilibrium. Generally, shifts should follow the following table. If in doubt, draw a picture of supply and demand.

Change	Shift	Eq. Price	Eq. Quantity
Supply Increase	Supply Right	Down	Up
Supply Decrease	Supply Left	Up	Down
Demand Increase	Demand Right	Up	Up
Demand Decrease	Demand Left	Down	Down

Figure 5: Table of both supply and demand shifts and effects.

3.3.2 Double-Shifts

Occasionally, questions may be asked where there are simultaneous shifts in both demand and supply. **For the purposes of AP Macroeconomics, you will NOT need to calculate exact double-shift equilibrium values.** Therefore, some values will be indeterminate- see the table below.

Demand	Supply	Eq. Price	Eq. Quantity
Increase	Increase	Indeterminate	Increase
Decrease	Decrease	Indeterminate	Decrease
Increase	Decrease	Increase	Indeterminate
Decrease	Increase	Decrease	Indeterminate

Figure 6: Table of simulatenous supply and demand shifts and effects on equilibrium.

4 National Economic Accounts

Corresponds to Chapter 12: "The National Economic Accounts."

5 Inflation and Unemployment

Corresponds to Chapter 13: "Inflation and Unemployment."

6 Money and Banking

Corresponds to Chapter 14: "Money and Banking"

7 Monetary Theory

Corresponds to Chapter 15: "Monetary Theory"

8 Aggregate Supply and Demand

Corresponds to Chapter 16: "Aggregrate Supply and Aggregrate Demand"

9 Monetary Policy

Corresponds to Chapter 17: ”Monetary Policy”

10 Fiscal Policy

Corresponds to Chapter 18: "Fiscal Policy"

11 International Trade and Finance

Corresponds to Chapter 19: "International Trade and Finance"