Introduction to Microeconomics

11 September 2024

ECO 1001

Prof. Maira Reimão

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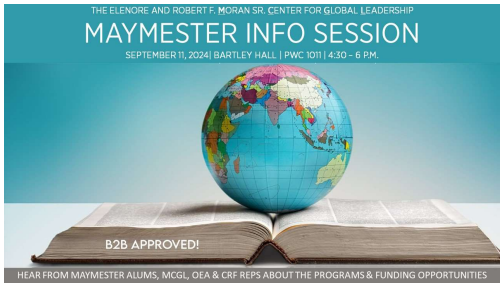
Admin Items

- Short reading for next class (Monday), under "Supply and Demand" tab
- Mark your calendars for Nov 13, 6pm, for *mandatory* event for all ECO 1001 students – Brian Collie, Managing Director and Senior Partner at Boston Consulting Group (and Villanova alum!) will give a talk to students
- Optional event reminders:



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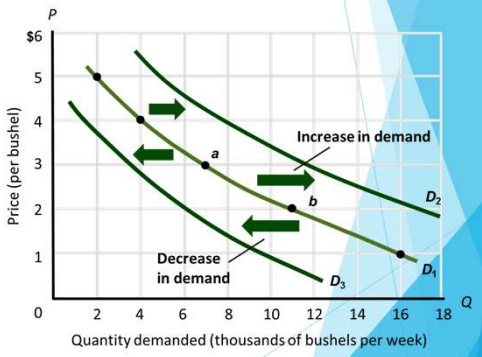
Again, Demand vs. Quantity Demanded

- A change in demand →
- When the **price of a good** remains the same and *any of the other 5 things change*, the **quantity demanded** changes and there is a shift in the demand curve.

A shift in demand



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Supply

- ***Supply:*** **maximum quantity** a seller is **willing and able** to sell **at various prices.**
  - Again, represented by a set of P and Q^S pairs.
- Example – supply of cookies
  - Notice that *quantity supplied* (i.e., that sellers are willing to sell) decreases with price

P ($)	Quantity Supplied (millions of boxes/month)
0	0
2	0
3	2
4	4
5	6
6	8
…	…

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The Law of Supply

- The Law of Supply: The higher the price of a good, the more of that good a seller will supply (*ceteris paribus*).
  - In other words, Price (P) and Quantity Supplied (Q^S) are *positively correlated*

$$P \uparrow \Longrightarrow Q^S \uparrow$$

- Remember that we are talking about a competitive market – producers are "price-takers". i.e., They see the price and react to it.
- Many things can be produced (remember the PPC), but whether they are produced or not will depend on whether it is worthwhile for producers to do so
  - Producers/sellers are only willing to supply a good if they can at least cover their marginal cost of production
- Quantity supplied increases with price because the *marginal cost* increases with quantity - willing to supply more (incur this higher marginal cost) *if* price increases

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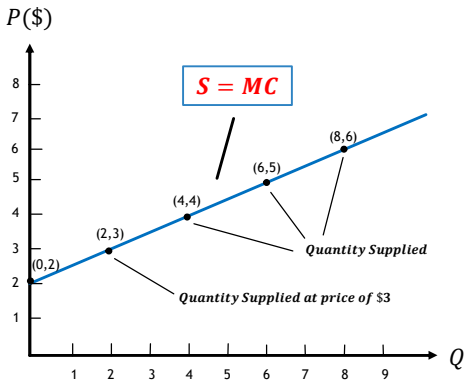
Supply vs Quantity Supplied



- Supply (S) is the whole curve - the entire relationship between price and quantity supply of a good.
  - Represented by the supply schedule or function
- Quantity supplied (Q^S) is a *point* on the supply curve
  - The quantity supplied at a particular price
  - Quantity supplied is the amount that a seller would like to sell at a given price – might not be the same as the quantity actually sold (e.g., if the price is too high people might not buy that much)

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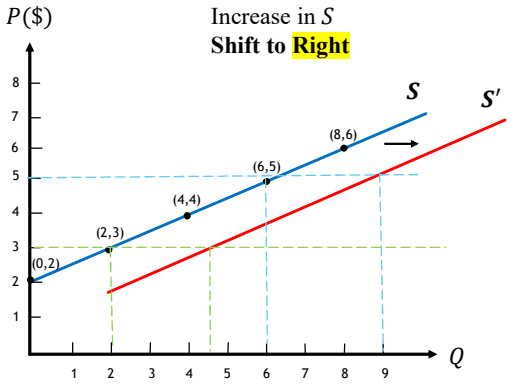
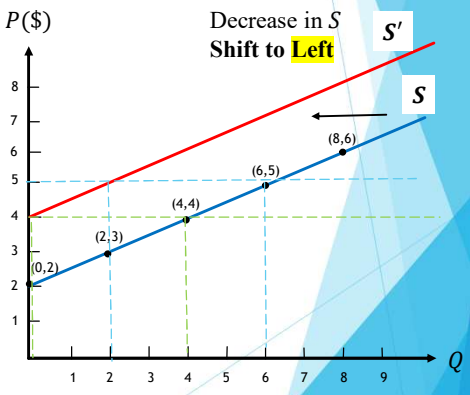
Changes in Supply

- Relates to changes in the entire supply curve (shift right or left)





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What can Cause a Change in Supply?

That is, "What could shift the supply curve?"

Changes in…

1. *Resource prices*
2. *Technology*
3. *States of the World*
4. *Taxes and subsidies - government intervention*
5. *Prices of related goods in production*
6. *Price expectations*

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Changes in Resource (input) Prices

- If an input price increases, supply decreases
- If an input price decreases, supply increases
- E.g., wheat for bread, semiconductors for cars, oil for flights

$$input\ price \uparrow \Longrightarrow \downarrow S$$
$$input\ price \downarrow \Longrightarrow \uparrow S$$

- One of the arguments against increasing the minimum wage
  - If wages go up, it becomes more expensive to produce things and supply will shift inward (decrease)

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Changes in Technology and State of the World

Changes in technology

- Changes in technology that can lower the cost of production leads to an increase in supply
- E.g., mass-production of garments; a pizza oven that can fit more pizzas

Changes in the state of nature/ state of the world

- World events can affect supply
- E.g., frost and agricultural supply, power outages, war

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Changes in Taxes and Subsidies

- Most taxes can be considered a cost for sellers
  - So, look at it the same way as a change in input prices:
    - If taxes increase, supply decreases
    - If taxes decrease, supply increases
  - e.g., tax on goods with high levels of pollution in production

$$taxes \uparrow \Longrightarrow \downarrow S$$
$$taxes \downarrow \Longrightarrow \uparrow S$$

- The opposite is true for a subsidy; can be considered a cost reduction.
  - If subsidies increase, supply increases
  - If subsidies decrease, supply decreases
  - e.g., subsidy for corn production

$$subsidy \uparrow \Longrightarrow \uparrow S$$
$$subsidy \downarrow \Longrightarrow \downarrow S$$

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Changes in Prices of "Related Goods" in Production

Is the related good a production substitute or a production complement?

Substitutes in production are goods that can be produced with the same resources, in the place of each other

$$p^{prod\ substitute} \uparrow \Longrightarrow \downarrow S$$
$$p^{prod\ subsitute} \downarrow \Longrightarrow \uparrow S$$

- E.g., spinach and lettuce (use the same land, same labor), clothes and towels (same labor, same machinery)
- If the price of a production *substitute* to good A increases, supply of good A decreases
- If the price of a production *substitute* to good A decreases, supply of good A increases

- If the price of the substitute to good A increases, the opportunity cost of producing good A increases throughout. So, produce less of it

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Changes in Prices of "Related Goods" in Production

Is the related good a production substitute or a production complement?

Complements in production are goods that are generally produced together

- E.g., chicken wings and chicken drumsticks, plastic bags and oil
- If the price of a *complement* to good A increases, supply of good A increase
- If the price of a *complement* to good A decreases, supply of good A decrease

$$p^{prod\ complement} \uparrow \Longrightarrow \uparrow S$$
$$p^{prod\ complement} \downarrow \Longrightarrow \downarrow S$$

Note that production substitutes/complements may not be substitutes/complements from a consumer perspective! Unrelated.

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Changes in Producer Expectations

Price expectations

- E.g., stock market; post-harvest sales
- If most producers expect prices to increase, *current supply* decreases
- If most producers expect prices to decrease, *current supply* increases

$$price\ expected \uparrow \Longrightarrow \downarrow S$$
$$price\ expected \downarrow \Longrightarrow \uparrow S$$

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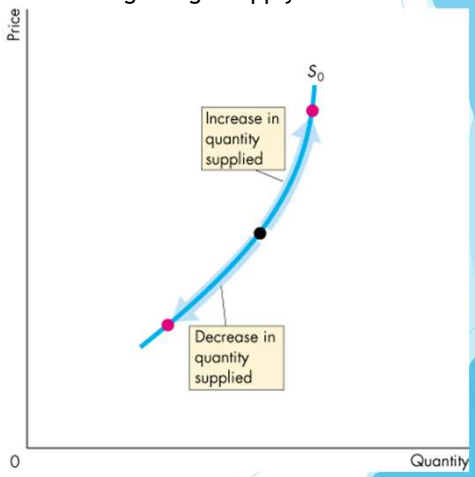
Again, Supply vs. Quantity Supplied

- A change in quantity supplied →
- When the **price of a good** changes and *other things remain the same*, the **quantity supplied** changes because there is a movement along the supply curve.
- This is the Law of Supply

Moving along a supply curve



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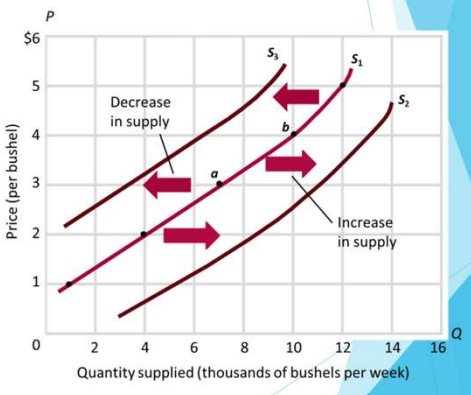
Again, Supply vs. Quantity Supplied

- A change in supply →
- When the **price of a good** remains the same and *any of the other 6 things related to supply change*, the **quantity supplied** changes and there is a shift in the supply curve.

A shift in supply



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Shifts in Demand for Gas?

MARKETS | COMMODITIES | GAS MARKETS

Gas Prices Fall Below $4 a Gallon for First Time in Months

Average price at pump has declined from high of $5.02 in June

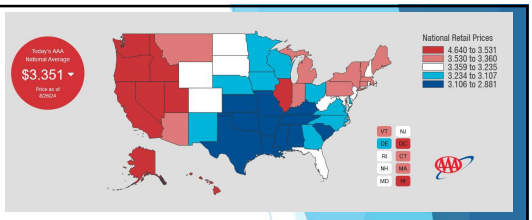
Gas prices on Wednesday dipped to below $4 a gallon for the first time since March.
PHOTO: MORRY GASH/ASSOCIATED PRESS

By Joseph De Avila Follow and Lauryn Agu Follow
Updated Aug. 11, 2022 9:36 am ET

The average price of a gallon of unleaded gasoline in the U.S. has fallen below $4, a 21% drop from June's peak, as demand for oil softens around the globe.

The national average dipped to $3.99 a gallon Wednesday afternoon and continued to trend lower on Thursday, according to OPIS, an energy-data and analytics provider. It is the first time since March that the average price of gasoline has been below $4 a gallon, giving drivers some reprieve as the rate of inflation remains near a four-decade high.

Gas prices in the U.S. set a record of $5.02 in June, according to data from OPIS. The fuel-price surge has been a big factor in overall inflation, according to economists. And as consumers feel the pinch, they tend to reduce consumption.



Gas prices are down. We could be headed for lows not seen since 2021

AUGUST 23, 2024 · 5:00 AM ET

By Scott Neuman

"The late-season wild card is always hurricanes"

A year ago, excessive heat forced Texas refineries to curtail operations, and Hurricane Idalia temporarily shut down oil production in the Gulf of Mexico, which contributed to higher prices. Despite record-breaking heat waves across the country this summer, Texas and Louisiana, where the majority of U.S. refineries are located, haven't been hit as hard.

Global events, EVs and an aging U.S. population affect prices

But other factors are also influencing the current downward trend in gas prices.

Iran, which produces 3 million to 4 million barrels a day, continues to aid its Hamas, Hezbollah and Houthi allies arrayed against Israel amid the ongoing Gaza conflict, but so far that hasn't affected Tehran's oil production. "If Iran gets more heavily involved, that could be a problem. ... But if things stay relatively contained there, it shouldn't have much impact on gas prices," the AAA's Gross says.

Meanwhile, China's demand for oil remains relatively low due to its flagging economy. OPEC+ is expected to curtail cuts in production starting in October. And the U.S. is pumping record amounts of petroleum.

"We've never produced more oil than we're producing now," Gross says. That record production comes as U.S. demand has tapered — from 9.8 million barrels of gasoline per day in recent years to barely 9 million per day now, Gross says.

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Market Equilibrium

- ***Demand:*** **maximum quantity** a consumer is **willing and able** to purchase **at various prices.**
  - Buyers want to buy a quantity for the lowest price possible
- ***Supply:*** **maximum quantity** a seller is **willing and able** to sell **at various prices.**
  - Sellers want to sell a quantity for the highest price possible

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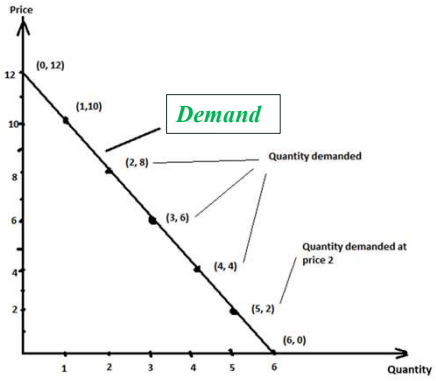
Back to the Market for Cookies

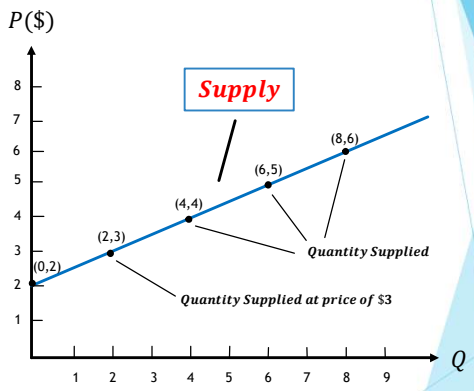


Demand function:

$$Q^d = -\frac{1}{2}P + 6$$

Inverse demand function:

$$P = -2Q^d + 12$$



Supply function:

$$Q^s = 2P - 4$$

Inverse supply function:

$$P = \frac{1}{2}Q^s + 2$$

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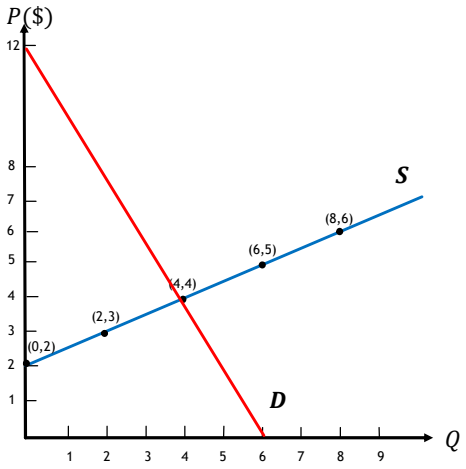
Market Equilibrium



Market equilibrium: $Q^d = Q^s$

At this point, sellers are selling everything they want to sell *at price p* and buyers are buying everything they want to buy *at price p*.

Solving for the equilibrium point:

$$Q^D = Q^S$$

$$-\frac{1}{2}P + 6 = 2P - 4$$

$$P^* = 4$$

$$Q^* = Q^{S*} = Q^{D*} = 4$$

P^*: the market equilibrium price

Q^*: the market equilibrium quantity

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