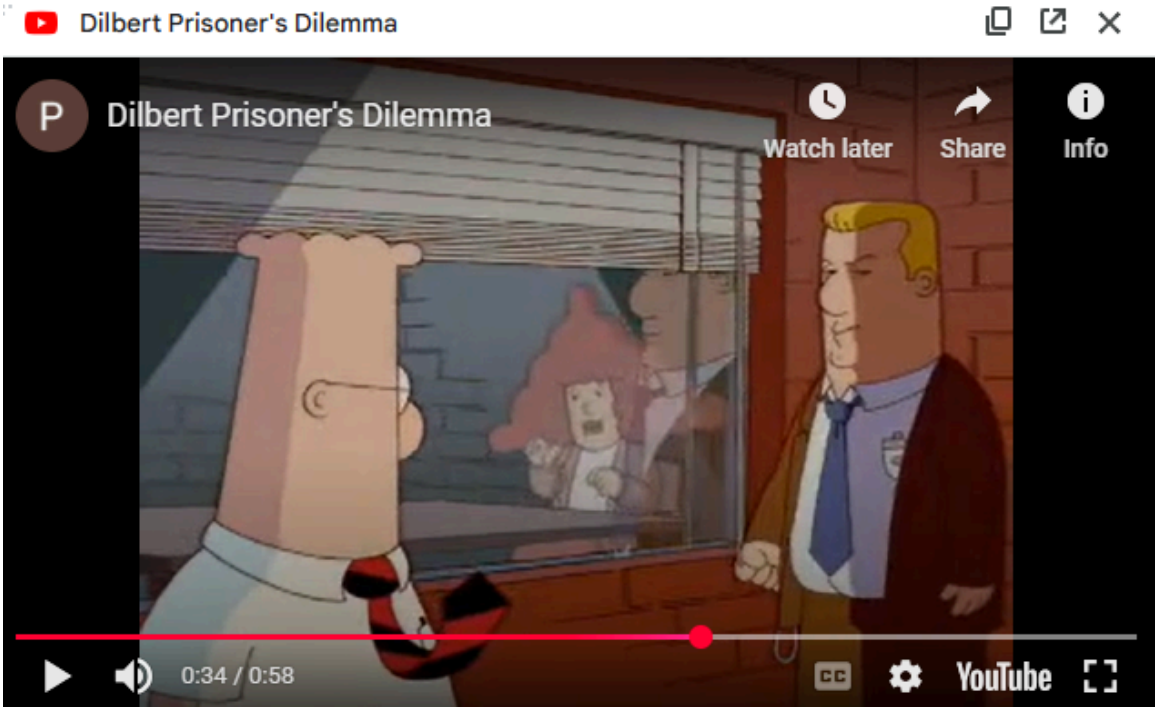
Market System

Adam Smith wrote in Wealth of Nations that humans have "**the propensity to truck, barter, and exchange** one thing for another." (Smith's Dogs) Whereas "**Nobody ever saw a dog make a fair and deliberate exchange of one bone for another with another dog**."

The **market** is an interconnected (man-made) system that facilitates **exchanges** by coordinating economic activities of production and consumption to allocate and utilize scarce resources efficiently (or generate more **wealth,** as Adam Smith advised).

Let's walk through a simple coordination game of the prisoner's dilemma to understand how this coordination process works at your “tummy” level.

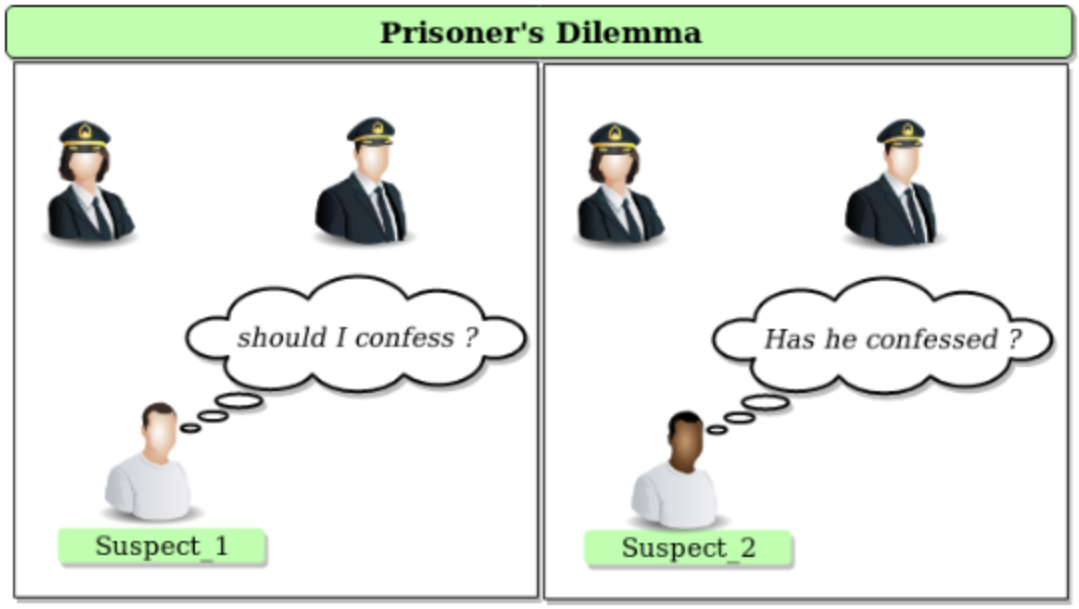
Let’s look at Dilbert's Prisoner's Dilemma



The prisoner’s dilemma demonstrates that purely self-interested and rational activities do not necessarily yield the best outcome for individuals when interacting with one another (such as playing a game).

Let’s play a game originally formulated by mathematician Albert W. Tucker (paper) to clarify this point. It has since become a classic example of a "non-zero-sum" (interactive) game.

Let's say you and your friend committed a successful robbery (e.g., there is no evidence!). However, the police suspect you and your friend and bring you to the station for questioning, in separate rooms.



Would you confess to the crime to avoid jail time? Would you trust your friend not to turn you in and not say anything?

What would be your "rational" choice? Cooperate with the police? Or defect?

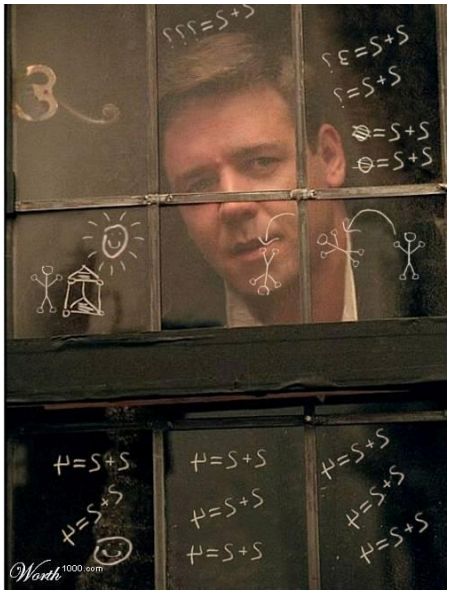
PD Payoff Matrix

	Cooperate	**Not Cooperate**
Cooperate	**3,3**	**1,10**
Not Cooperate	**10,1**	**0,0**

The "expected" outcome—assuming that you and your friend are self-interested and rational—is that you and your friend cooperate with the police. However, this results in the second-best outcome of either (3 & 3) or both spending five years in jail.

This particular seemingly inescapable sub-optimal outcome is known as the Nash Equilibrium. See Nash's insight into this game.

In game theory, Nash equilibrium is an outcome in a **noncooperative game** for two or more players in which *no player's expected outcome can be improved by changing one's own strategy* (in this case, the rational decision of cooperation).



More formally, if there is a choice in the game with the property that no player can benefit by changing his or her choice while the other player keeps his or her choice unchanged, then that choice and the corresponding payoffs or outcome constitute a Nash Equilibrium.

The Mathematics of Tucker: A Sampler

A. W. Tucker

A Two-Person Dilemma: The Prisoner's Dilemma

Two men, charged with a joint violation of law, are held separately by the police. Each is told that

(1) if one confesses and the other does not, the former will be given a reward of one unit and the latter will be fined two units,
(2) if both confess, each will be fined one unit.

At the same time each has good reason to believe that

(3) if neither confesses, both will go clear.

This situation gives rise to a simple symmetric two-person game (not zero-sum) with the following table of payoffs, in which each ordered pair represents the payoffs to I and II, in that order:

		II: confess	II: not confess
I	confess	(−1, −1)	(1, −2)
	not confess	(−2, 1)	(0, 0)

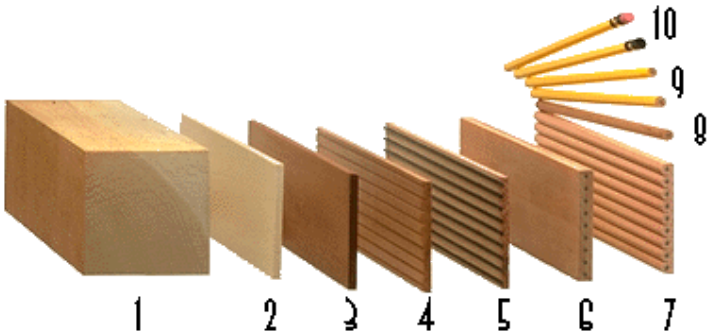
Clearly, for each man the pure strategy "confess" dominates the pure strategy "not confess." Hence, there is a unique equilibrium point* given by the two pure strategies "confess." In contrast with this non-cooperative solution one sees that both men would profit if they could form a coalition binding each other to "not confess."

That said, it is clear that the best outcome, in this particular game, is achieved when you and your friend do not cooperate with the police. You may avoid jail time (e.g., 0 & 0).

This **first best outcome** can be achieved by **coordinating** with your friend (or even a stranger). In this case, coordination is possible if you and your friend send a **signal** to each other.

Thus, the market utilizes **prices** and **wages** as signals to coordinate the economic activities of production and consumption among self-interested (and, hopefully, rational) individuals. (The CFTC traders below are sending buy and sell signals at a price, which may be right or wrong for traders.)

View this classic video to appreciate the market's coordinative power in even making a pencil.

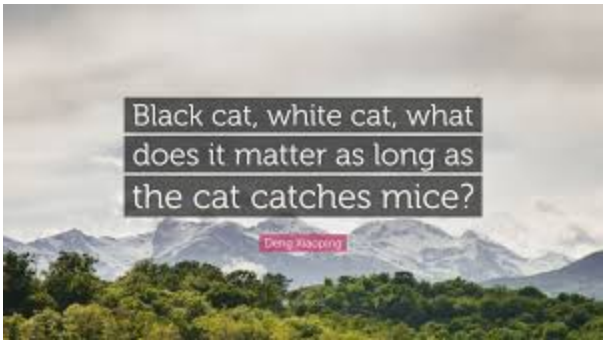


What signal is used to get a logger in Indonesia or Brazil to cut down more cedar trees? What signal is used to get a miner in Siberia to dig for more graphite? What signal is used to convince Walmart to store pencils on their shelf (just when I needed them)?

The market system is efficient at allocating scarce resources and promotes cooperation among vast numbers of participants.

Professor Friedman observes in the “Pencil” video that “**No central coordinator can achieve this level of efficiency.**”

Reflection: Do you think about why China reformed its economy and introduced market principles in 1978? (And why did the Soviet system eventually fail in the 1991s?)



Most economists believe that the use of prices (wages) or the market system is the most efficient means of coordinating the economic activities of self-interested individuals. Professor Lindblom of Yale suggests

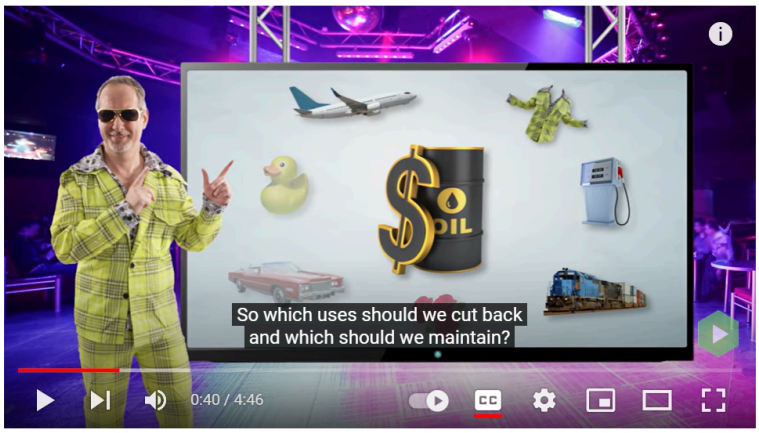
> *The great and distinctive merit of efficiency prices that permits a drastically improved degree of efficient choice* (**based on the rationality of cost and benefit analysis**). *They make cost information universally available.*

1978 China

Today China

What if there is no proper or accurate pricing mechanism in place? That is an interesting thought. You may end up with countries like North Korea, Cuba, or Venezuela. (Check out a grocery store photo after a food riot in Venezuela).

Finally, to appreciate how markets influence and coordinate our economic activities of production and consumption, check out my former GMU professor, who illustrates in a fun (yes - fun) video how rising oil prices revolutionized the floral industry and drove more gift-givers to chocolates and stuffed animals. A Price Is a Signal Wrapped Up in an Incentive



As discussed, the price system allows people with dispersed knowledge and information about flower production to coordinate global economic activity. (**This is a deep thought....**)

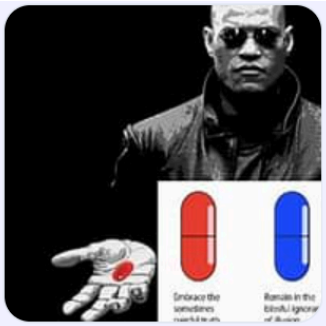
Finally, what do you think about this profound question from Hayek: ***What is the problem we wish to solve when we try to construct a rational economic order?***

Warning! The Use of Knowledge in Society (paper) by Hayek

If you want to learn as much as possible about economics from just one article, read Friedrich A. Hayek's "The Use of Knowledge in Society," published in the September 1945 issue of *The American Economic Review*. First, no other article clearly explains the economic problem. Second, none provides a better understanding of the superiority of market economies. Third, it exposes one of the most deplorable fallacies in the standard

approach to teaching economics. Ultimately, it highlights the perils of economic planning's ignorance.

In **The Matrix**, the **red pill** symbolizes the choice to confront reality and the truth, while the **blue pill** represents the comfort of ignorance and the continuation of one's life in the Matrix. When Neo is offered this choice by Morpheus, he must decide whether to take the red pill, which leads to a deeper understanding of the world, or the blue pill, which allows him to remain in a state of blissful ignorance. The choice between these two pills reflects a broader philosophical debate about the nature of reality and the human condition.



So, what is a market?

The market is *any "structured" space where producers and consumers come together to efficiently engage in economic activities such as production* and *consumption*."

In other words, goods, services, and resources are *exchanged (e.g., "I give you this for that…)* or traded. It is important to note that there are three possible outcomes from exchange or trade.

Positive-Sum or **Win-Win** (Voluntary and **Rational** Exchange)

Zero-sum or Win-Loss (Exploitation)

Negative-Sum or Loss-Loss (Violence – Both Lose)

Our histories and experiences are dominated by Zero-Sum reasoning and motivation. (e.g., I win and you lose…) And today, the zero-sum mindset is prevailing again.

By Invitation | A win-lose situation?

To understand America today, study the zero-sum mindset, writes Stefanie Stantcheva

Young people and city-dwellers are among those most likely to see one group's gain as another's loss

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Jul 7th 2025 | 5 min read

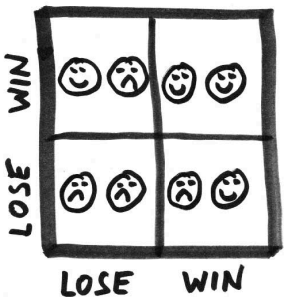
But the "market" - when properly structured and enforced - promotes Positive-Sum outcomes via "voluntary" exchanges in which everyone is better off. If not, they would not have exchanged in the first place!

> *Win-win situations are important because they can lead to positive outcomes for all parties involved:*
>
> *Win-win situations can establish trust between parties, leading to long-term relationships.*

For this reason, misinformation, fraud, or coercion can manipulate and impair market outcomes. Therefore, for the market to function effectively, it requires a proper structure, such as well-established laws, order, and property rights, as well as effective enforcement.

Without the proper “structure,” Zero-Sum or even Negative-Sum exchanges are likely to become prevalent, especially when dealing with strangers in the market.

Related to this line of thinking, anthropologist Joseph Henrich suggests that the market may help generate positive behavioral codes (e.g., positive-sum relationships) within a community.



In other words, the market system promotes justice and fairness. This paper provides further insight into this provocative idea.

And Professor Ernst Fehr posits in his paper that a well-established and working “market” may help tame our “self-interest” and make us less nasty and even brutal.

However, as we will document below, many people deviate from purely self-interested behavior in a reciprocal manner. Reciprocity means that in response to friendly actions, people are frequently much nicer and much more cooperative than predicted by the self-interest model; conversely, in response to hostile actions they are frequently much more nasty and even brutal. The *Edda*, a 13th century

Many don’t see the phenomenal trust and cooperation embedded in the market system. Just before winning a Nobel prize, Kenneth Arrow extolled trust as a “lubricant” of a social system and an “extremely efficient” mechanism for easing transactions and promoting prosperity.

Is (Positive-Sum) Exchange good?

As discussed, rational and voluntary exchanges lead to a more efficient allocation of scarce resources (or increased production) and, in turn, generate greater utility.

Can we prove this? Look at the following wine-beer production example (my favorite consumption goods!)

Required Labor Input

Production Capabilities (PPC)	Product	US(workday)	France(workday)
	Wine (1Liter)	2	1
	Beer (1 Liter)	1	2

Daily Production without Market Exchanges

Product	US Workers	US Output	FR Workers	FR Output	**Total Output**
Wine	100	50	100	100	150
Beer	100	100	100	50	150
	200	150	200	150	**300**

Daily Production with Market Exchanges
(Specialization is now possible!)

Product	US Workers	US Output	FR Workers	FR Output	**Total Output**
Wine	0	0	200	200	200
Beer	200	200	0	0	200
	200	200	200	200	**400**

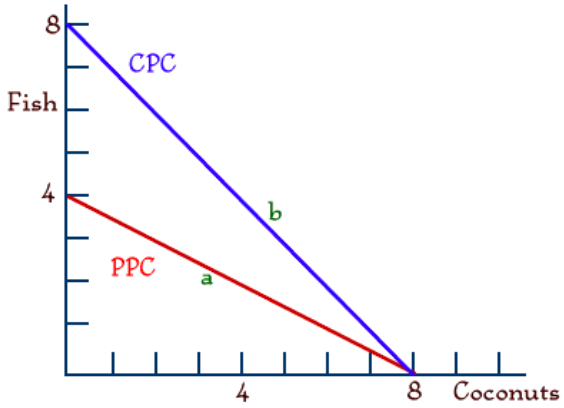
The market enables its participants to **specialize** in producing goods and services in which they are skilled (more on this later).

With specialization and trade, the total production gain in wine and beer is 50 liters each or 100 liters with the same resources.

If we specialize and exchange, we can get a “free lunch”—*something from nothing*. In most principle textbooks, this free lunch generated by specialization and trade is called the *“gains from trade*.”

Our simple case study indicates that specialization and exchange make us happier (e.g. we get more stuff from the limited resources).

The PPC model can be used to demonstrate this point. (Reflection: You can consume more than you can produce by exchanging, in this case, coconuts for fish. Cool!)



With trade, Crusoe's Consumption-Possibilities Curve (CPC) can lie beyond his Production-Possibilities Curve (PPC)

Going back to the US and France, for example, each economy can produce what it is good at (e.g., the US produces B and trades for W from France).

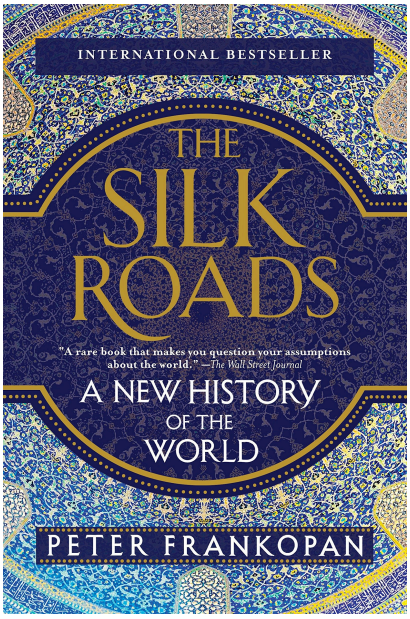
What would be the trading terms or relative price of one unit of Wine for Beer? The US can trade with France on more favorable price terms, such as “one beer for one wine,” and consume more of both beer and wine than would have been possible if there were no exchange.

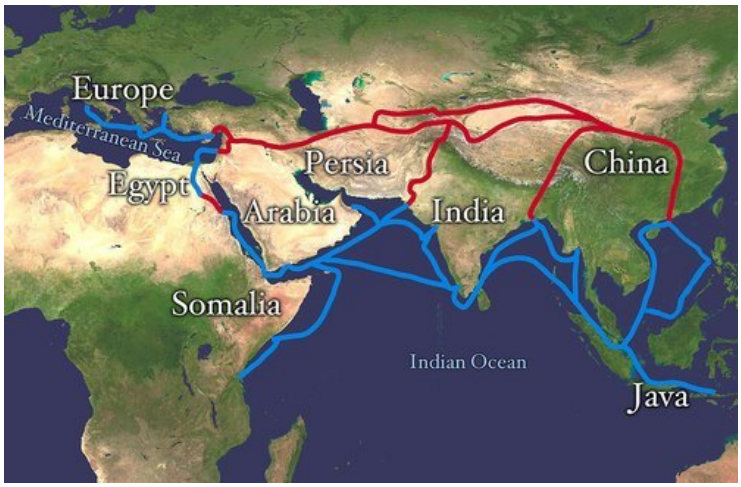
This way, the US can trade its beer for cheaper wine from France and go outside its production frontier. In other words, the US can realize a “free lunch” or “gains from trade.” (Wow!)
In this analysis, the key to growing the economy or business is to 1) specialize in what you are good at and 2) exchange.

Of course, this wealth-creation process is only possible if we establish and enforce trading or market rules (e.g., property rights).

Perhaps this is one reason why the Aztecs became wealthy and ruled present-day Central Mexico back in the 1300s AD. (This is my photo from a recent visit to Museo Nacional de Antropología in Mexico. You have to go!)

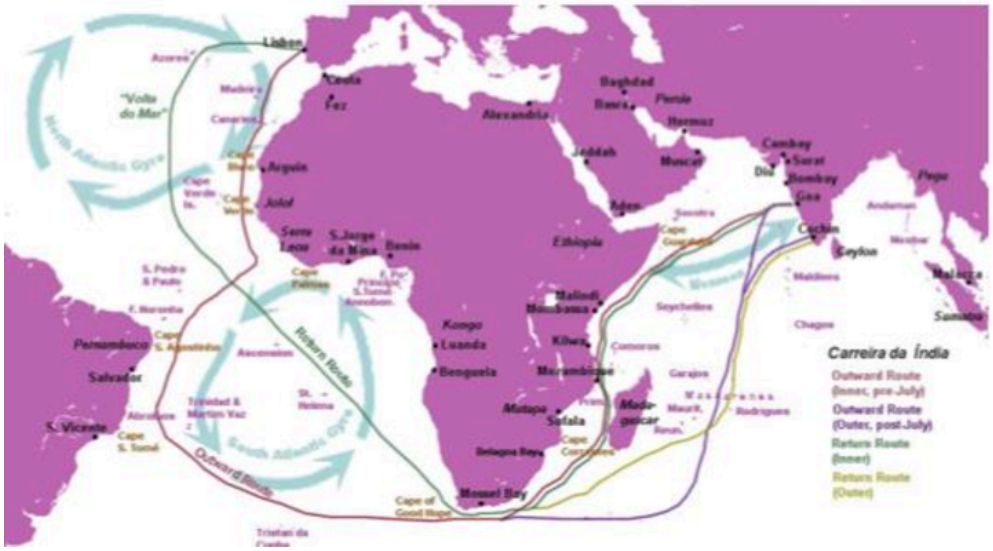
Do you have any thoughts on how Venice (Italy) became so wealthy back in the early days? (The Silk Roads by P. Frankopan: Must read for those who want to know where we are headed.)





The Ancient Silk Road
Much wealth depended on keeping the road open and connected...

But everything comes to an end, even the Silk Road. Guess who took over ancient global trade? (Starts with P and D… new empires.)



Specialization

The existence of markets enables specialization in particular production activities (e.g., being a chef or physician) and exchange for other goods to help satisfy material wants (e.g., utility).

Any thoughts on why specialists tend to make more money?

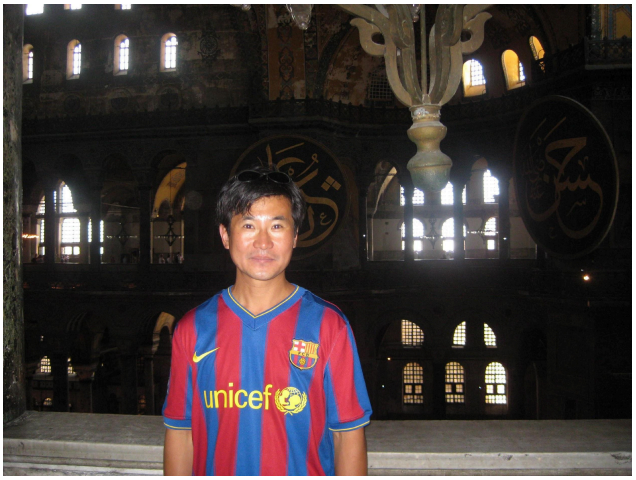
Medical Specialty	2021/2022 Average Salary Offer	2020/2021 Average Salary Offer	Year over Year Change (YOY)
1. Orthopedic Surgeon	$565,000	$546,000	3%
2. Cardiologist (Interventional)	$527,000	$611,000	-16%
3. Urologist	$510,000	$497,000	3%
4. Gastroenterologist	$486,000	$453,000	7%
Cardiologist (Non-invasive); counted with #2 above	$484,000	$446,000	8%
5. Radiologist	$455,000	$401,000	12%
6. Pulmonologist/Critical Care	$412,000	$385,000	6%
7. Hematologist/Oncologist	$404,000	$385,000	5%
8. Anesthesiologist	$400,000	$367,000	8%
9. Dermatologist	$368,000	$378,000	-3%
10. Oral Maxillofacial Surgeon	$368,000	NA*	NA*
11. Neurologist	$356,000	$332,000	7%
12. OB/GYN	$332,000	$291,000	14%
13. Psychiatrist	$299,000	$279,000	7%
14. Hospitalist	$284,000	NA*	NA*
15. Rheumatologist	$258,000	NA*	NA*
16. Internal Medicine (Internist)	$255,000	$244,000	5%
17. Family Medicine Physician	$251,000	$243,000	3%
18. Pediatrician	$232,000	$236,000	-2%
19. CRNA	$211,000	$222,000	-5%
20. Nurse Practitioner	$138,000	$140,000	-1%

In a basic sense (or, in economic jargon, specialization), it involves generating more goods or better outcomes (or outputs) and reducing the costs (or inputs) associated with production activities.

Note that there are two types of cost advantages.

> *Absolute Advantage:* (my definition) *The ability to produce more output from given inputs or resources than others.* You are **simply** better!
>
> *Comparative Advantage:* (my definition) *The ability to produce a good or service at a lower opportunity cost than others.* You are **relatively** better!

We will examine the Tale of Two Cousins to appreciate the difference between absolute and comparative advantages. Yao Ming was born on September 12, 1980, and John Min continues to teach at NOVA 🙁.



Which cousin should specialize in playing basketball games?

Cousin Ming is absolutely better at playing basketball than Min. So, Ming should leverage his absolute advantage and play basketball games. This rational choice yielded a net worth of $120M for Ming. (Well done!)

And who should wait in a long line to get a new iPhone? Ming and Min are equally good at standing in lines for tickets.

That said, Min has a relatively “lower” opportunity cost. Therefore, he should leverage his lower comparative cost advantage and wait in line for a new iPhone.

That said, unfortunately for Min, others have even lower opportunity costs for standing in lines. Check out the WP article.

It is clear that Min should specialize in another market to achieve long-term economic viability. (Teaching economics?)

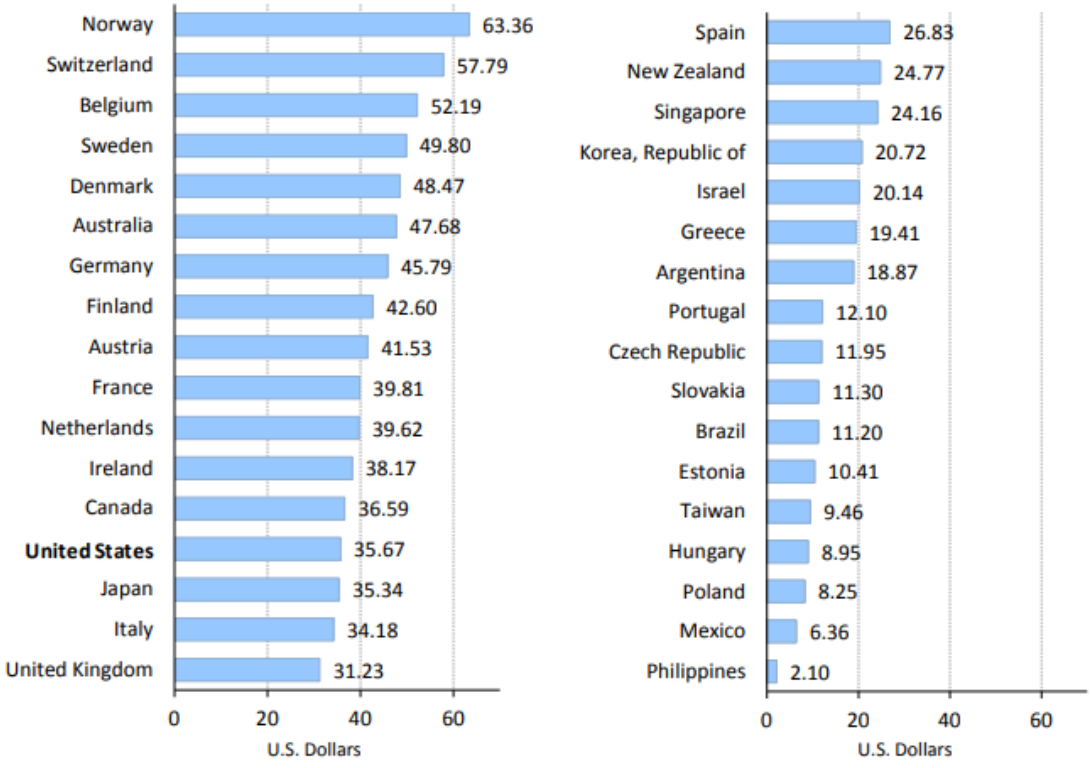
This man charges $33 an hour to stand in line for you. After making a lot of money with the launch of the iPhone 5, he now owns a business empire.

Published on 05/28/2025 at 5:31 pm · Written by Van McGrath · It will take you : 2 minutes

© Stewartville Star - This man charges $33 an hour to stand in line for you. After making a lot of money with the launch of the iPhone 5, he now owns a business empire.

Examine the relative manufacturing costs for various economies worldwide and assess who should specialize in manufacturing (since they can produce at relatively lower costs).

Chart 1. Hourly compensation costs in manufacturing, U.S. dollars, 2012



What are the sources for absolute/comparative advantages?

This is an important question, as knowing what you are good at enables you, or even a community, to specialize and trade to gain greater returns from their production activities.

There are two main sources. They are:

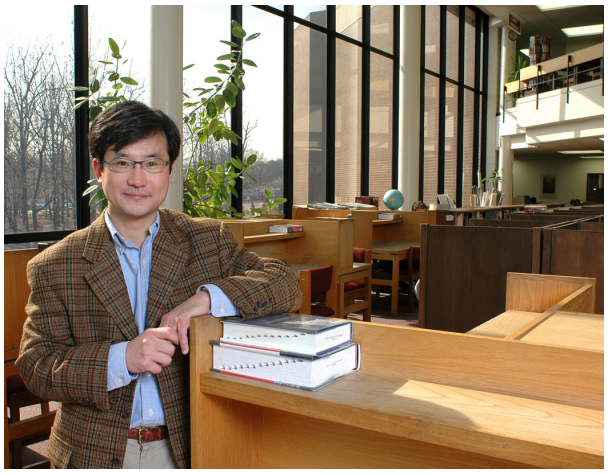
1. Endowment - Gift

2. Trading Opportunities - Markets

Adam Smith said, "**Everyman lives by exchanging**."

One may be endowed with many natural or resource gifts (e.g., height, hunting skills, etc.), but specialization and trade are impossible without trading opportunities.

(Fortunately for Cousin Min, he found something for which he has an advantage.)

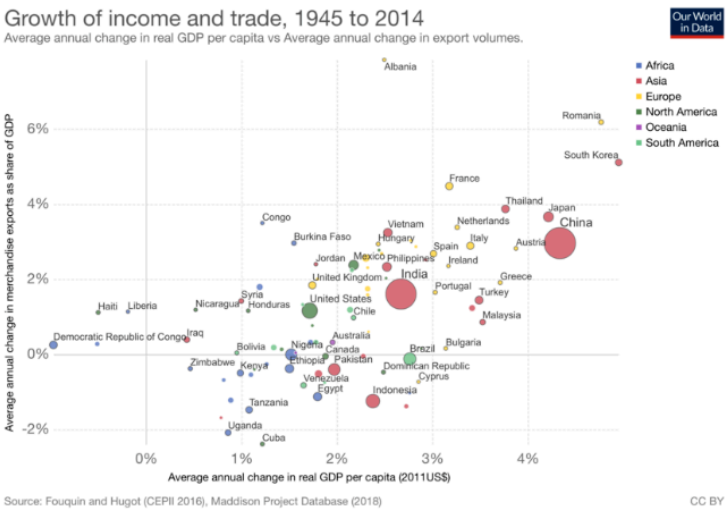


The degree of specialization possible and realized in an economy is a function of market size, which indicates its wealth or standard of living.

This may explain why many people prefer to live in highly populated metropolitan areas. Professor Francis Fukuyama observed, "*In a developed society, no one is self-sufficient; everyone depends on a wide range of other people throughout the society.*"

Finally, as we enter the fourth wave of globalization, driven by the digital revolution, there is renewed debate over whether it is a beneficial force, powering economic growth and allowing the spread of ideas to improve people's lives; or whether it erodes communities, and widens the gap between the elites and the rest of the world.

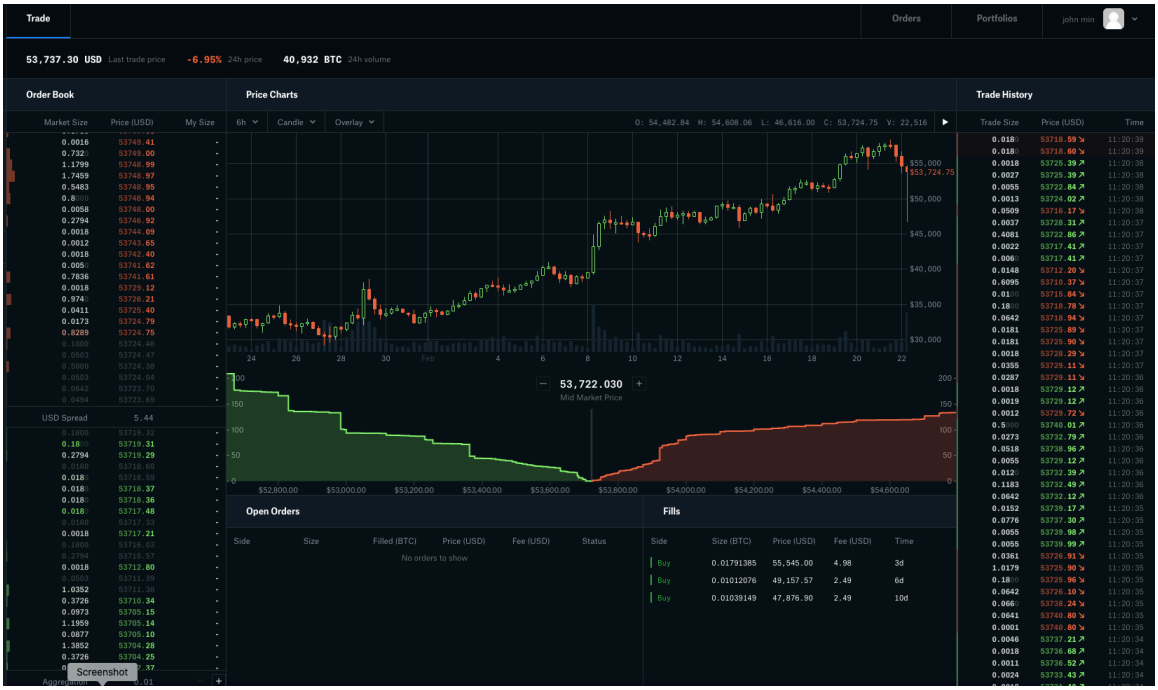
For further discussion, refer to a recent WEF Global Agenda note. It finds that income growth is positively correlated with trade.



So interesting, and more to come…

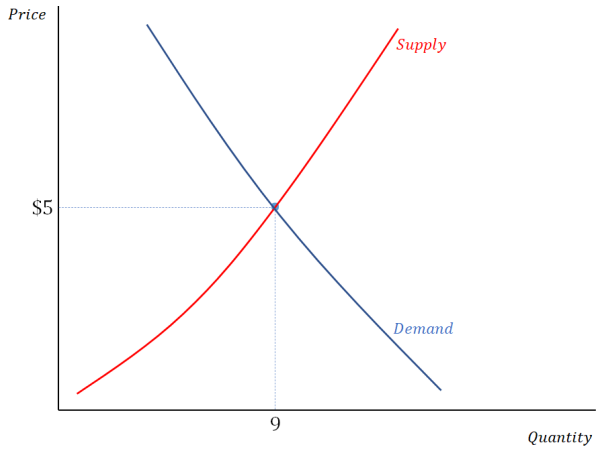
Do You Have a Model (Map) of the Market?

Yup. We have the **supply** and **demand** map or graph. Check out the BTC market below.

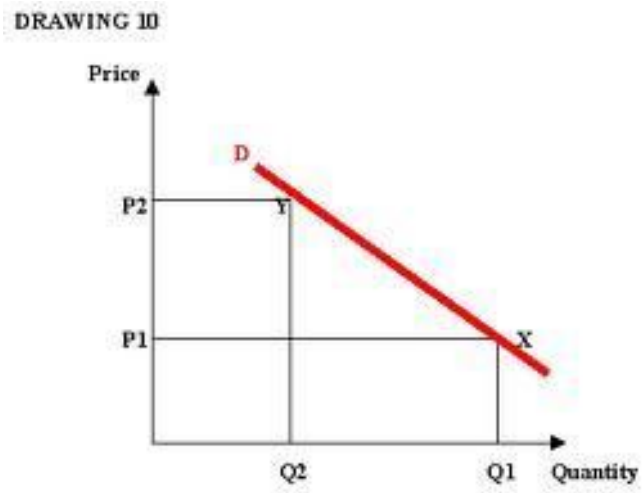


The green graph represents the market demand and the relationship between price (x) and quantity (y) demanded in a market. The red graph represents the market supply. (Live Market)

Now, let's examine the supply and demand model or graph.



The underlying intuition is that the quantity (q) demanded will increase if the price declines. This is also known as **the law of demand**, and three elements drive it.



First, we tend to prefer consuming more.

Usually, having two kisses is preferred over just having one, given that we have a fixed or limited income or means to buy them. Therefore, if the price declines, we tend to buy more.

Second, the marginal diminishing returns suggest that additional goods (or Kisses) we consume tend to generate incrementally lower “utility” values.

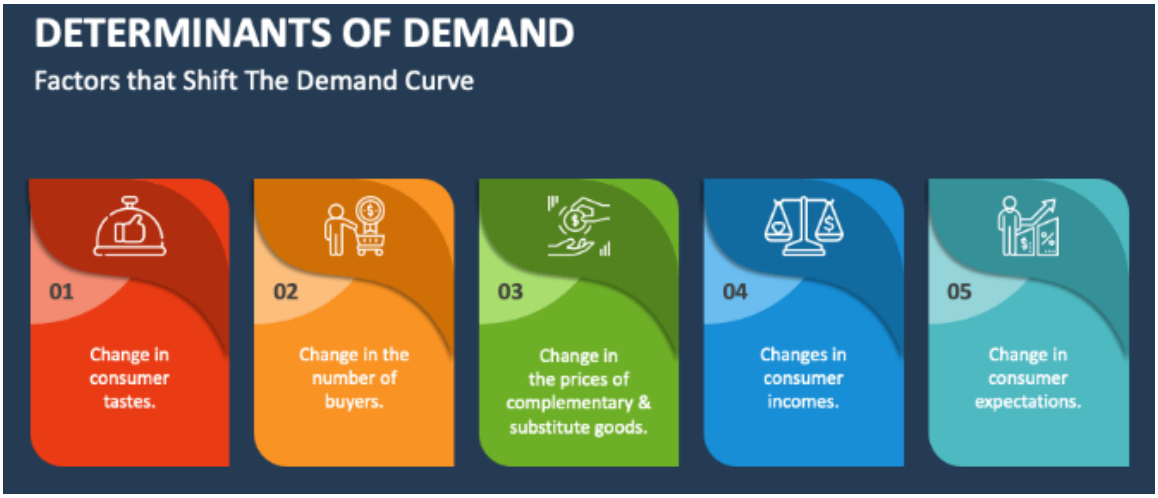
Therefore, we tend to buy them only if the price is lowered incrementally.

Third, we tend to buy more of one particular good or service as a substitute for other goods when its price is lowered compared to other goods prices.

What **other factors** determine the demand? Other factors determine our willingness and ability to buy a particular good or service. What are they?

Our list may include style, brand, reliability, other available cars, reputation, technology, efficiency, and other factors. Similarly, five factors determine and affect the demand for a particular good or service.

They are commonly known as the **determinants of demand**, and they are:



When showing the graphical relationship between prices and quantities demanded in a market, we hold the determinants of demand constant or impose the condition of *ceteris paribus.* What

Does ***Ceteris Paribus*** Mean?

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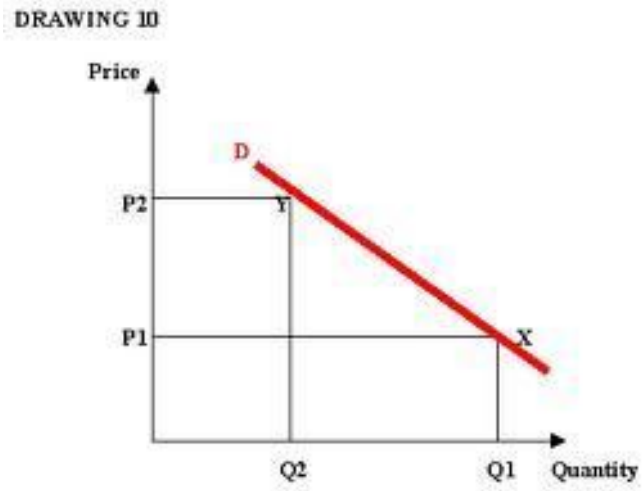
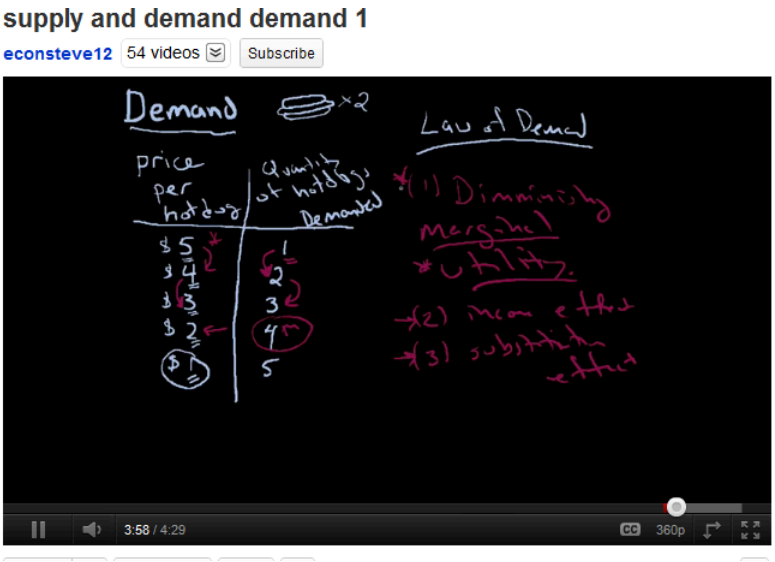
> *Latin phrase that translates approximately to "holding other things constant" and is usually rendered in English as "**all other things being equal"**.*
>
> *In economics and finance, the term is shorthand for indicating the effect of one economic variable on another, holding constant all other variables that may affect the second variable.*

The **ceteris paribus** condition enables us to see the relationship between two variables: price and quantity demanded (by freezing other determinants of demand).

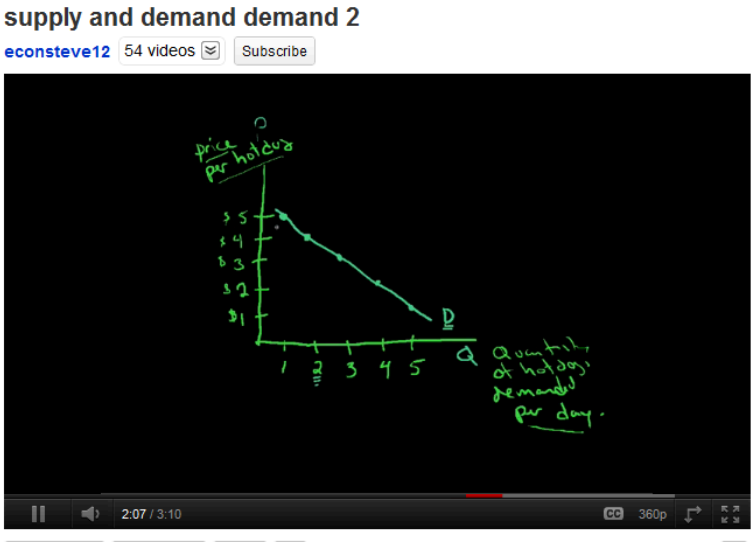
By the way, Magic Econ Words are: Laissez Faire, Opportunity Costs & **Ceteris Paribus**.

Now, what happens when the price changes? The *quantity demanded changes*. Lower prices tend to increase demand in the market.





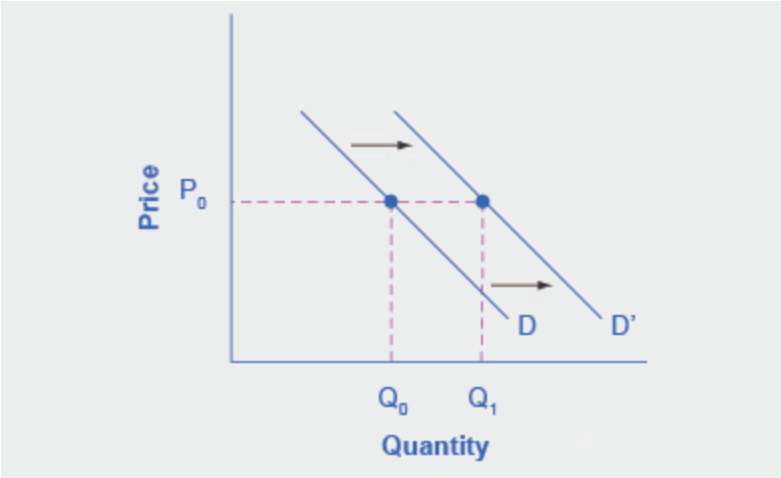
Check out this short video for another look at the law of demand and its curve on a graph.



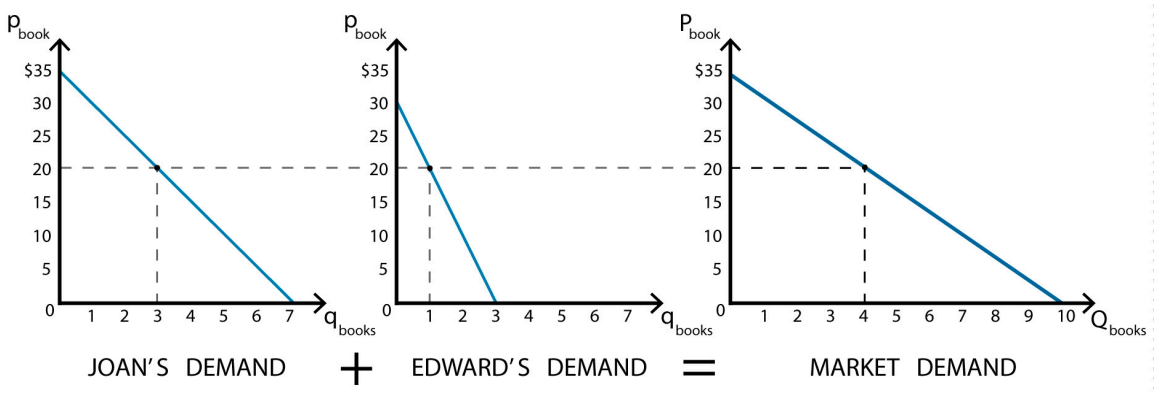
Here is the follow-up video on demand… That hot dog looks great! How much am I willing to pay? Watch this short video to find out.

What happens if one or more demand determinants change? We need a new demand curve to show the relationship between prices and quantities.

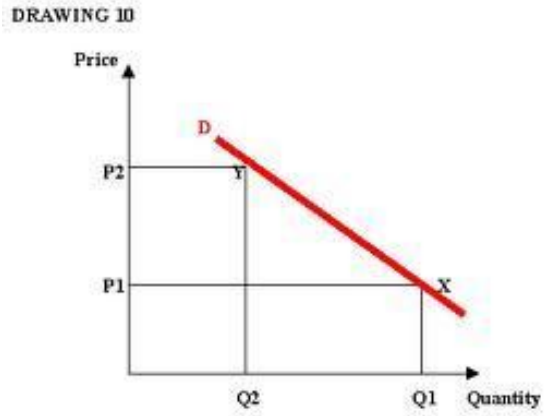
A shift in the demand curve represents this. Demand has *changed*. In the example below, the demand has changed for a given price; now, more is demanded.



How do we illustrate the demand curve for a given market? The market demand curve is composed of individual curves, all of which depict a negative relationship between prices and quantities demanded. However, they may vary in terms of linearity, slope, location, and so on.

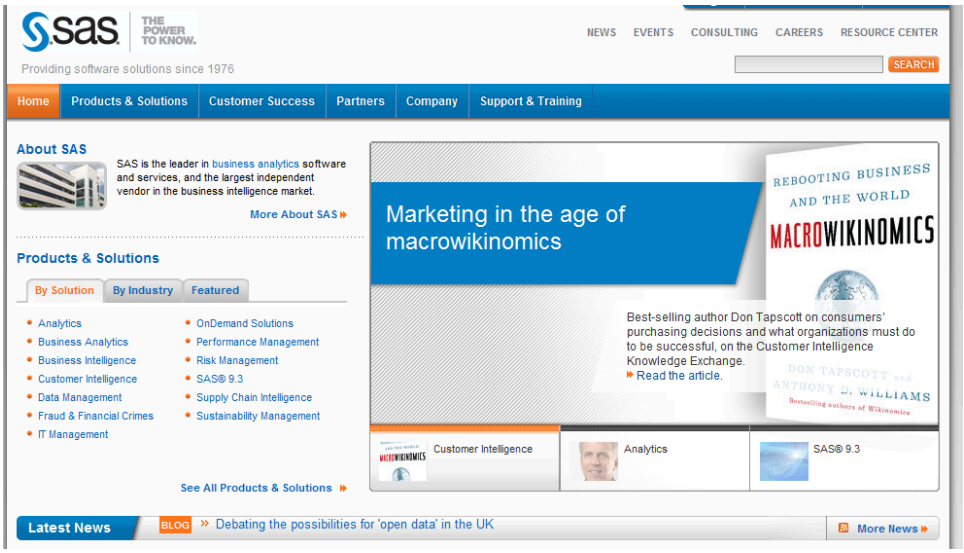


That said, **the law of large numbers** prevails, resulting in a robust market demand, as illustrated on the next page.



Why do we study demand and its curves?

Companies like SAS help customers forecast their market demand by utilizing advanced technology.



[SAS® Demand Forecasting for Retail]

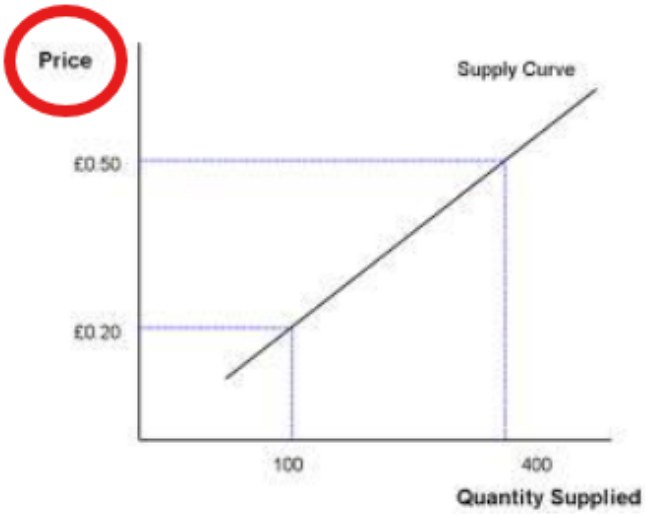
Retail organizations today must strive to satisfy each customer's unique demand. Gone are the days of the mass market, when a single assortment, standard pricing, and a single "average location" forecast satisfied consumer demand in all stores.

*To be effective, **forecasts today must account for demand differences across all stores**, geographies, and product lines http://www.sas.com/industry/retail/ris_demand.html*

See if SAS is recruiting. SAS jobs are posted here.

What about the supply?

A supply curve graphically represents a relationship between prices and quantity supplied. When producing a supply curve, the condition of **ceteris paribus** is imposed to hold the **non-price** determinants of supply constant. They are:



What happens when the price changes? There is a *change in quantity* supplied. Higher prices lead to a greater amount being supplied.

What happens when one or two determinants of supply change? We need a new supply curve to illustrate the relationship between price and quantity.

This is represented as a shift in the supply curve. There is now a *change in supply.* In the example below, the supply has changed for a given price, resulting in a greater quantity being supplied.

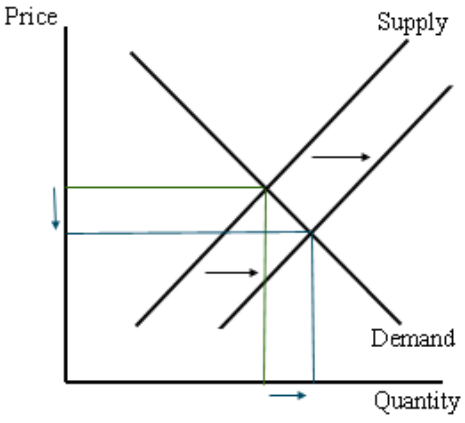
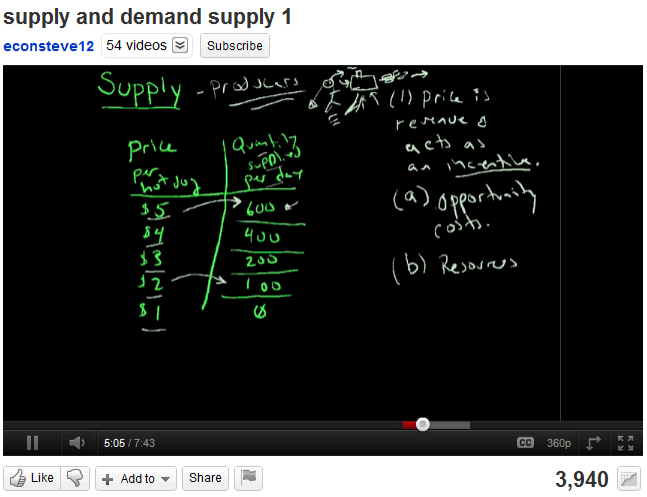


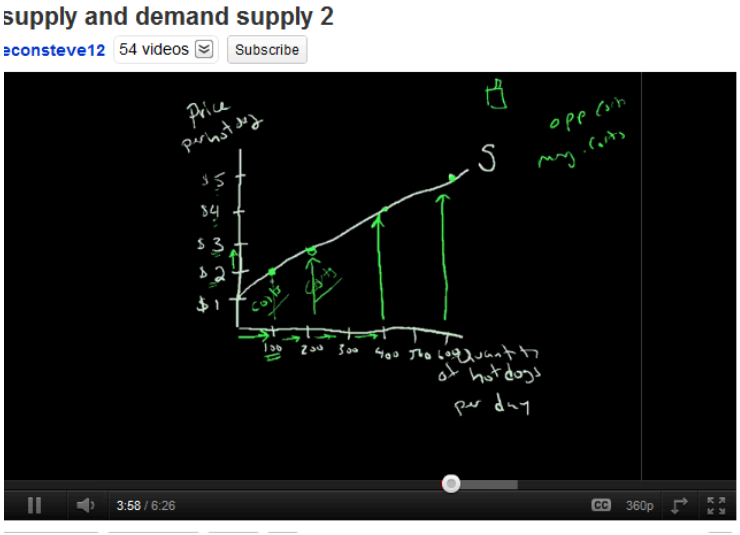
Figure 2.

Why does the supply curve have a positive slope? As businesses produce more, they tend to experience the effects of diminishing returns or increasing opportunity costs (since their capital inputs tend to be fixed in the short run).

They are willing to produce and sell more if the price increases to cover their increasing production costs.



For more on supply, view: [supply and demand supply 1]

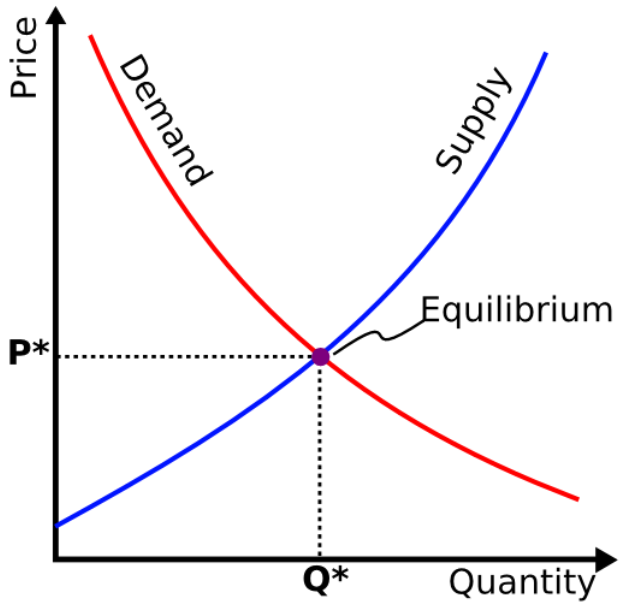


Do you think a pig should go into making a hot dog or bacon? See this video to see how supply (production costs) relates to demand (benefit or utility).

It is amazing stuff! This short video explains why “price” is an effective signal for optimally allocating limited resources through production and consumption.

Supply and Demand (Market) Analysis

The demand curve has a negative slope, while the supply curve typically has a positive slope. Therefore, within a given market, these curves intersect graphically.

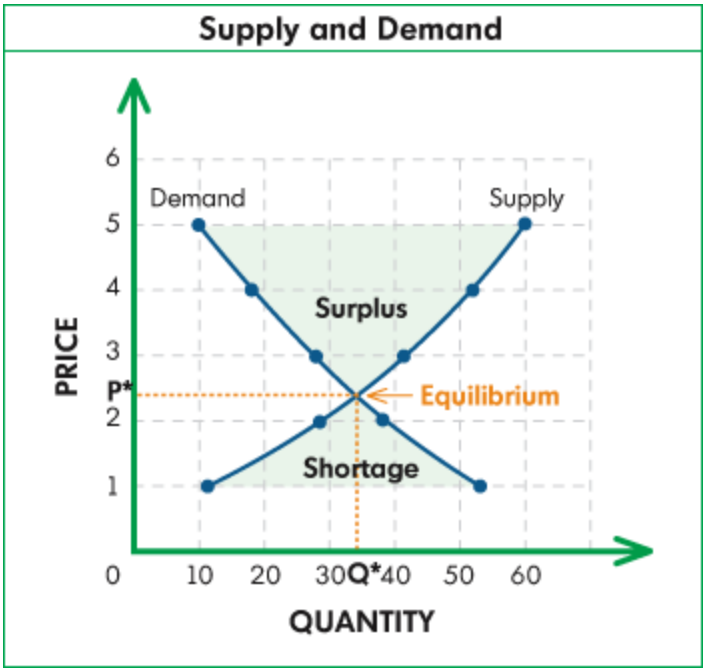


The intersection establishes an equilibrium price. Some refer to this price as a market-clearing price.

Which determines the equilibrium or market-clearing price? Supply or demand? Note that both supply and demand curves come together to determine the equilibrium price.

And this price serves as a signal to efficiently and effectively coordinate the underlying production and consumption activities.

What happens if a market price is higher than the equilibrium price? A surplus will emerge. On the other hand, if the market price is lower than the equilibrium price, then a shortage will emerge.



Adam Smith's **invisible hand** will guide the market price to converge towards equilibrium when there is either a surplus or a shortage, and if there is no price control.

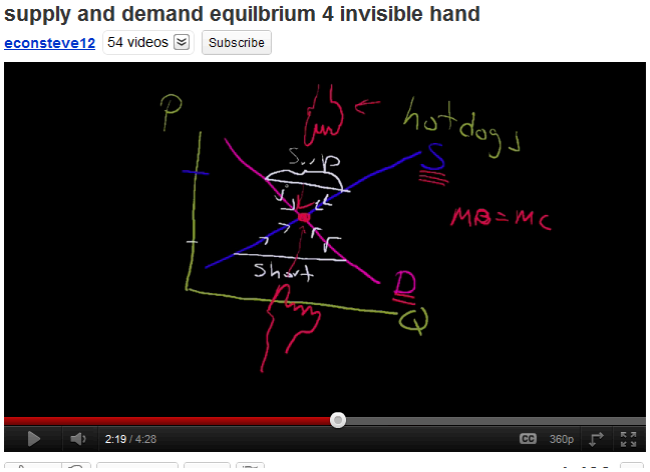
What is this invisible hand? First of all, it is invisible. And it is represented by individuals making rational choices (e.g., marginal cost and benefit analysis) driven by self-interest.

The invisible hand suggests that if there is a surplus of unsold goods, businesses will lower their prices to sell them more quickly.

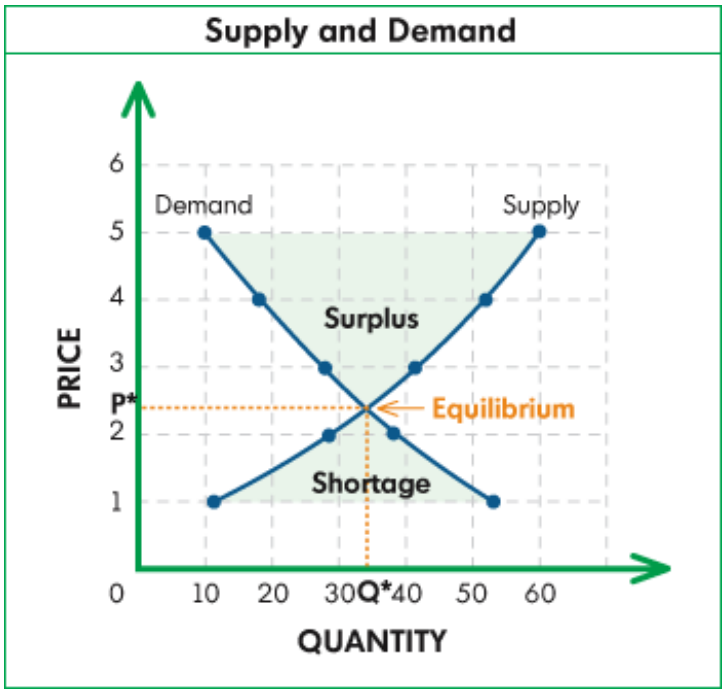
This is a rational choice. Conversely, if there is a shortage, businesses will raise prices, or consumers will offer to pay higher prices. These are rational choices for both.

With the help of the invisible hand, markets tend to self-regulate to achieve their equilibrium to eliminate surpluses and shortages.

More importantly, at equilibrium prices, consumers pay for their goods at prices they consider they are worth to them (e.g., marginal benefit or utility). Meanwhile, businesses sell their stuff at prices that cover the cost of making it (e.g. ,marginal cost). Wow!



For more on the invisible hand, see this short video. In an equilibrium state, there are no surpluses or shortages. Therefore, the invisible hand helps the economy function more efficiently and operate on its frontier.

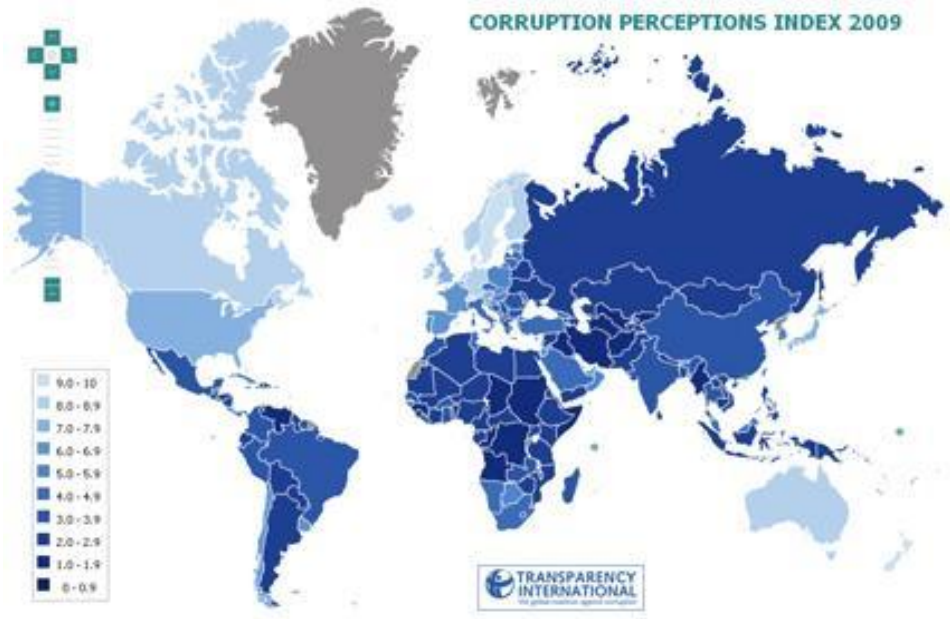


Finally, for markets to effectively self-regulate to bring about efficient allocations of resources, they also need:

Perfect information
Free competition (easy exit and entry)
Rule of law (e.g., property rights)
No corruption

This may explain why corruption can impair the market's ability to generate material wealth in many countries.

The Transparency International's Corruption Perception Index data (http://www.transparency.org) suggests that corruption and GDP per capita may be correlated.



Governments have often stepped in to control prices (and thereby try to remain popular). An ancient record shows even Babylonians (1755-1750 BC) attempted to set a "maze of price control regulations.

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About Commentary Resea

Reprinted from the Foundation for Economic Education

In 1892 the French archaeologist Henri Pognon made a historic discovery a few dozen miles northeast of Baghdad: a massive tell that held the ruins of the ancient city-state Eshnunna.

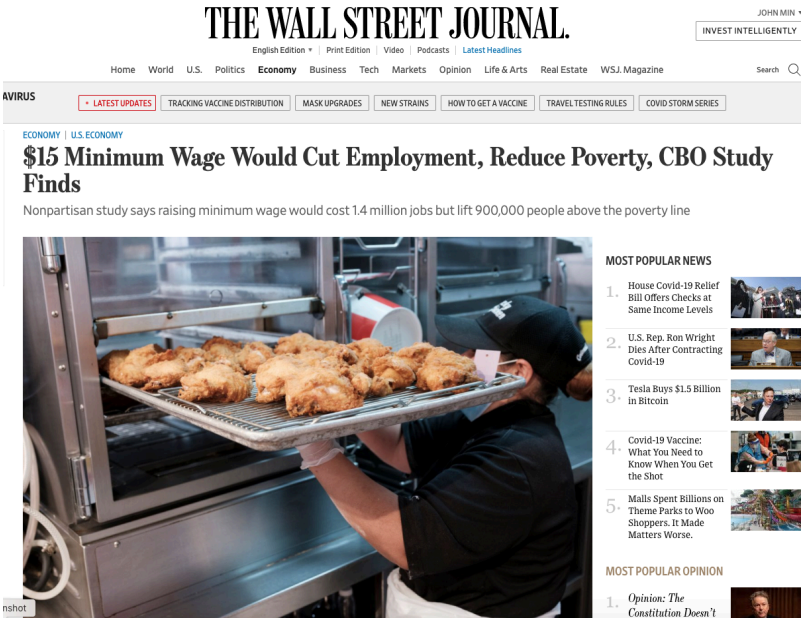
Though it was not excavated until decades later by another archaeological team led by Dutch Egyptologist Henri Frankfort, the tell was one of the great finds of the century, revealing secrets of a Mesopotamian city that had been hidden for millennia.

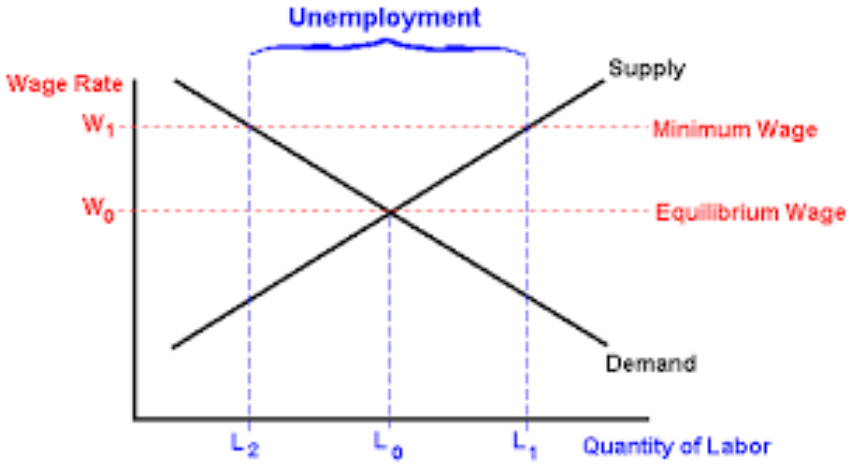
Among the secrets discovered on cuneiform tablets was that Eshnunna used price controls, a discovery notable in that it appears to be the oldest historical record of humans fixing prices. (I've attempted to verify this fact with economic historians, and will let you know if I get a response.)

> *1 kor of barley [she'um] is (priced) at [ana] 1 shekel of silver;*
>
> *3 qa of "best oil" are (priced) at 1 shekel of silver;*
>
> *1 seah (and) 2 qa of sesame oil are (priced) at 1 shekel of silver. . . . The hire for a wagon together with its oxen and its driveris 1 massiktum (and) 4 seah of barley. If it is (paid in) silver, the hire is one third of a shekel. He shall drive it the whole day.*

Now, let's examine the intended and unintended effects of government policies on price setting. The supply and demand model (graph) enables us to analyze the impacts of policy on targeted markets.

Why may the **minimum wage** hurt those it is intended to help? Check out the CBO's recent research paper.





In addition to unemployment, the minimum wage is likely to increase workplace discrimination. Why?

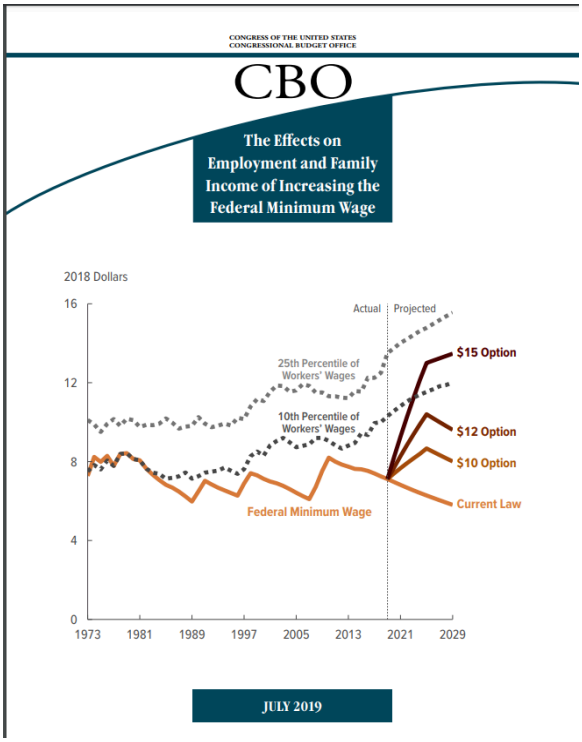
Price or wage is no longer primarily used to determine employment. Instead, non-price factors such as race, gender, age, and others will likely influence the employment selection.

Of course, in the long run, employers are incentivised to substitute **labor** with **capital** or utilize more robots or technology.

Why? Employers will increasingly find the capital's relative costs more favorable than employing human workers (who now cost $15/hr or more).

If you want to get scared, check out a recent study from McKinsey on how robots will take over in the coming years. Study

Finally, the Congressional Budget Office released a more sophisticated study of the effects of higher minimum wages on employment. Check out their findings.



2019 estimate because those effects were complex and would have required further analysis, as CBO explained at the time.

Effects on Employment

Increasing the minimum wage would affect employment in several ways.

- Higher wages would increase the cost to employers of producing goods and services. Employers would pass some of those increased costs on to consumers in the form of higher prices, and those higher prices, in turn, would lead consumers to purchase fewer goods and services. Employers would consequently produce fewer goods and services, and as a result, they would tend to reduce their employment of workers at all wage levels.
- When the cost of employing low-wage workers goes up, the relative cost of employing higher-wage workers or investing in machines and technology goes down. Some employers would therefore respond to a higher minimum wage by shifting toward those substitutes and reducing their employment of low-wage workers.
- In some limited circumstances, increasing the minimum wage could boost employment if employers had what is known as monopsony power—that is, bargaining power that allows them to set wages below the rates that would prevail in a more competitive market.[9]
- Because increasing the minimum wage would shift income toward families with lower income, it would boost overall demand in the short term. Lower-income families spend a larger proportion of any additional income on goods and services than do families with higher income. That increased demand for goods and services would reduce the drop in employment for several years after the implementation of a higher minimum wage, CBO projects.

*Here is a real-world story you might find interesting. It involves a bank board, RFP, consulting, and the St. Louis Cardinals. (**You must come to the lecture to find out what happened**.) Once upon a time, a bank had a problem it could not solve. So, it reached out.*


EverBank

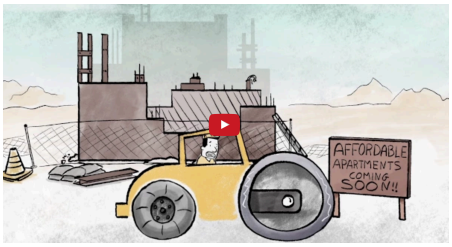

RFP

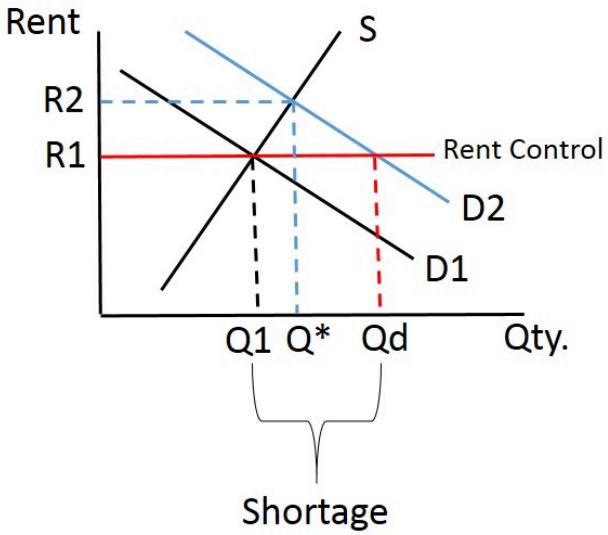
Hope you enjoyed the story. (If you missed the class, I hope it was good.)

Now, what about Rent Control?

Housing prices have increased in many parts of the country. What can policymakers do to make housing more affordable? And what happens when their good intentions go awry?

Rent control increases demand for controlled units but discourages landlords from expanding or entering the rental market, thereby decreasing the supply of rental housing. (For more, watch this Video)





When there is a price control on necessities such as bread, gas, and medicine, you will likely see the effects of a shortage. See below.

Of course, this type of condition is ideal for corruption. (Do you have any thoughts on why? By the way, please call me when you become a dictator in a small country. We will get into the corruption business!)

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Group Questions

4.1 Discuss why Adam Smith wrote in *Wealth of Nations* that "*the greatest improvement in the productive power of labour, and the greater part of the skill, dexterity, and judgment with which it is anywhere directed, or applied, seem to have been the effects of the division of labour."* See a FEE write-up on this topic.

4.2 Ted can wax 4 cars per day or wash 2 cars per day, and Tom can wax 3 cars per day or wash 1 car per day.

What is each man's opportunity cost of waxing a car?

Who has an absolute advantage in waxing cars?

Who has a comparative advantage in waxing cars?

4.3 Explain – using the key concepts discussed so far – why it costs $1,500 and 6 months to make a sandwich from scratch (article).

Why is this approach to production not a good use of resources? How does a free and global market enable us to consume goods at lower prices?
https://youtu.be/URvWSsAgtJE

4.4 Why does the demand curve slope downward? Why does the supply curve slope upward? Given the demand and supply schedules below:

Price (dollars per CD)	Quantity Demanded (per day)	Quantity Supplied (per day)
5.00	300	100
6.00	250	150
7.00	200	200
8.00	150	250
9.00	100	300

What is the market equilibrium?

If a CD is $6.00, describe the situation in the CD market. Explain how market equilibrium is restored.

A rise in incomes increases the quantity of CDs demanded by 100 per day at each price. What is the new equilibrium, and how does the market adjust?

A rise in the number of recording studios increases the quantity of CDs supplied by 75 per day at each price. People download more music from the Internet, and the quantity demanded of CDs decreases by 25 per day at each price. With no change in incomes, what is the new equilibrium, and how does the market adjust?

Massachusetts Institute of Technology

4.5 Massachusetts Institute of Technology Department of Economics 14.01 Principles of Microeconomics, Exam #1 Wednesday, October 10th, 2007.

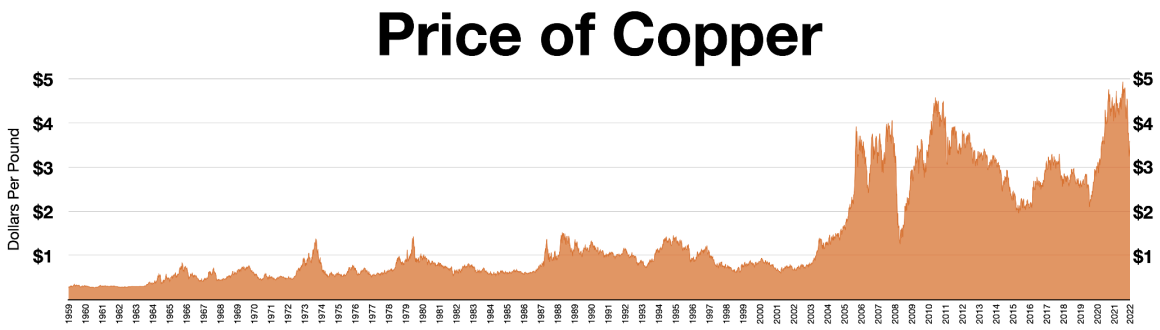
In Country Faraway, cigarettes are forbidden, so people trade cigarettes on the black market. The cigarette demand is $Q_D = 12 - P$, and the supply is $Q_s = 2P$.

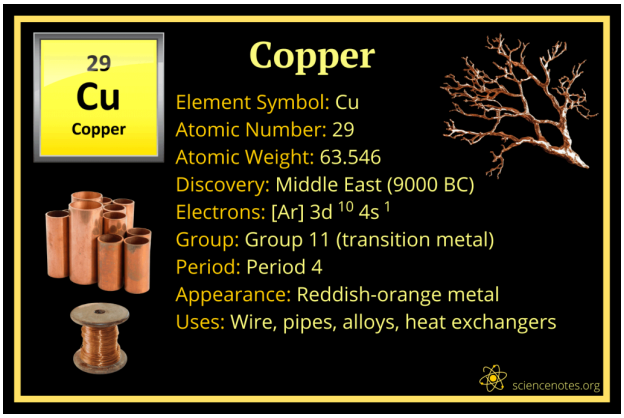
Find the equilibrium price and quantity in the black market.

The government becomes aware of the black market and reinforces the police so that half of the cigarette supply will be seized and destroyed.

Under these circumstances, what are the demand and supply functions? What is the new equilibrium price and quantity? Show the change by using a supply and demand diagram.

4.5 Discuss what is likely to happen to the copper price in the US next year. Utilize the supply and demand framework, including an appropriate graph, to elaborate our view.





Questions to Ponder (for Fun): Market
Instructions: Answer each question in 2-3 sentences.

According to Adam Smith, what fundamental human "propensity" drives the existence of market systems?

How does the "Prisoner's Dilemma" illustrate a key concept about purely self-interested and rational activities in a non-cooperative game?

What is a "Nash Equilibrium" in the context of game theory, and how does it relate to the Prisoner's Dilemma example?

How do prices and wages function as "signals" within a market system, and what is their primary role?

What are "gains from trade," and how does specialization contribute to achieving them?

Explain the concept of *ceteris paribus* and its importance in economic analysis, particularly when studying demand and supply curves.

List three factors that contribute to the downward slope of the demand curve.

Why does the supply curve typically have a positive slope?

Describe what happens in a market when the price is set above the equilibrium price.

According to the source, what conditions are necessary for markets to self-regulate and achieve efficient resource allocation effectively?

Ponder Answer Key

According to Adam Smith in *Wealth of Nations*, the fundamental human propensity that drives market systems is "the propensity to truck, barter, and exchange one thing for another." This innate desire for exchange forms the basis for how markets facilitate transactions and coordinate economic activities.

The Prisoner's Dilemma illustrates that purely self-interested and rational actions do not always yield the best collective outcome for individuals interacting within a non-cooperative game. In the dilemma, both prisoners acting rationally in their self-interest leads to a sub-optimal outcome where both confess, rather than the ideal outcome where both remain silent.

Nash Equilibrium is an outcome in a non-cooperative game where no player can improve their expected outcome by unilaterally changing their strategy, assuming other players' strategies remain unchanged. In the Prisoner's Dilemma, the Nash Equilibrium is when both players confess, as neither can do better by changing their decision if the other's decision is fixed.

Prices and wages serve as crucial signals in a market system, coordinating the economic activities of production and consumption among individuals. They communicate information about scarcity, costs, and consumer preferences, guiding producers on what to produce and consumers on what to buy.

"Gains from trade" refer to the "free lunch" or increased total production and consumption that results from specialization and exchange. When individuals or countries specialize in producing goods or services in which they have a comparative advantage and then trade, they can consume more than they could make individually.

Ceteris paribus is a Latin phrase meaning "all other things being equal" or "holding other things constant." In economics, it's crucial because it allows analysts to isolate the effect of one variable on another (e.g., price on quantity demanded) by assuming all other influencing factors remain unchanged.

Three factors contributing to the downward slope of the demand curve are: first, the preference for consuming more goods; second, the principle of diminishing marginal utility, where additional units yield less satisfaction; and third, the substitution effect, where consumers buy more of a good when its price falls relative to substitutes.

The supply curve typically has a positive slope because as businesses produce more, they often encounter increasing production costs due to diminishing returns or rising opportunity costs (as capital inputs might be fixed in the short run). Therefore, they are willing to supply more units only if the price they receive for those units increases to cover these rising costs.

When a market price is higher than the equilibrium price, a "surplus" will emerge. At this higher price, the quantity supplied will exceed the amount demanded, leading to unsold goods or services in the market.

For markets to effectively self-regulate and achieve efficient allocations of resources, they require perfect information, free competition (easy exit and entry for businesses), the rule of law (especially property rights), and the absence of corruption. These conditions ensure that the "invisible hand" can guide the market towards equilibrium.