[MUSIC]
Hi,Professor Navarro here.
In the second lecture we will drill down
into two keywords
that you heard about often in your life,
supply and demand.
In particular I'll show you how the forces
of supply and demand
lead to an equilibrium in the market and
thereby setting market prices.
Perhaps most interestingly we will see
that the market price reaches
its competitive equilibrium at precisely
the point that demand and supply
curves cross.
That's where the forces of demand and
supply are just in balance.
[MUSIC].
>> The British philosopher Thomas
Carlyle once said teach a
parrot the word supply and demand and you
got an economist.
Of course, economics is hardly that simple
but Carlyle's raw
observation does he hit on a basic truth
of economics.
Namely, that the concept of supply and
demand rest at
the core of any study of how the market
system works.
In this lecture, we're going to try and
master some basic elements
of supply and demand.
Let's start then by looking carefully at
this figure.
It's a typical supply and demand diagram
for
a popular product in the consumer market,
computers.
Note that price will always be labeled on
the vertical axis.
And that quantity will always be labeled
on the horizontal axis in these diagrams.
Note also that the demand curve slopes
downward and that
the supply curve slopes upward.
We will soon learn that where these two
curves cross, we're likely to find the
market equilibrium.
Now let's construct each of the component
parts of this diagram
beginning with the consumer side of the
equation, the demand curve.
In order to build a demand curve, we've
got to have some data on price and
quantity.
This we have in this table, which provides
a demand schedule for corn flakes.
Why don't you take out a pencil and paper
now and try drawing a demand curve from
this data?
Did you label your axes correctly?
Does your demand curve look like this?
So, in this figure, the consumer will buy
20 boxes of cornflakes at point
E, if the price is 1, but only 9 boxes at
point A, if the price is 5.
The implication of this downward sloping
demand curve is that the
lower the price, ceteris peribus, the more
units the consumer will demand.
And the higher the price, ceteris peribus,
the less the consumer will demand.
This is not just common sense, it's also
a principle based on very careful
scientific observation.
It's called the Law of Demand.
Why does quantity demanded tend to fall as
price rises?
For two reasons.
First there is the substitution effect.
When the price of a good rises, I will
substitute other similar goods for it.
For example, as the price of beef rises, I
eat more chicken.
Second reason why the quantity demanded
falls as price rises is the income effect.
This is because when, say, the price of
beef rises, my purchasing power declines.
And that portion of the increase of my
purchases of chicken
due to my reduction in purchasing power is
the income effect.
We'll talk more about the substitution and
income effects in the next lecture.
But in the mean time,
what's this ceteris paribus stuff I just
talked about?
I kind of sneaked those words in on you,
didn't I?
But I did that on purpose because the
concept
of ceteris paribus is really critical to
understanding economic analysis.
The words ceteris paribus are Latin for
other things constant.
And economists usually use this ceteris

paribus assumption to
both draw their diagrams as well as
isolate the effects
of specific changes in a market.
For example, in order to draw the demand
curve in two-dimensional
price and quantity space, we have to hold
the other things constant.
Which also affect the demand curve.
Things like income and tastes and the
prices of other products.
These other factors are called shift
factors because if
one of these factors changes, the demand
curve will shift
inwards or outwards.
For example, suppose the average income of
consumers rises.
With more money in their pockets consumers
will tend to buy more of everything.
Which way do you think the demand curve
will shift in this case?
That's right.
It will shift outward just as a
fallen income will shift the demand curve
inwards.
So how about a change in another shift
factor, the prices of other goods?
Think about it this way.
Suppose you were analyzing the market for
beef and the price of chicken rises.
What do you think will happen to the beef
demand curve?
If you said the beef demand curve will
shift out, you're right.
This is because beef and chicken are
substitutes
for each other in the broader market for
meat.
So, if the price of one goes up, the
demand for the other goes up or shifts.
Other similar examples would include corn
flakes and
oatmeal, pens and pencils and oil versus
natural gas.
Still, a third shift factor has to do with
consumer tastes.
Suppose that tomorrow, the American
Medical
Association publishes a report that says.
That people who eat prunes regularly live
on average several years longer, while
people who eat onion rings every day tend
on average to live several fewer years.
What do you think will happen to the
demand for prunes and onion rings?
But another way,
which way will the demand curve shift?
Now check this figure out to see if you
got it right.
This table summarizes the effect of the
various shift
factors on the demand curve in the
automobile market.
Note that besides income, prices of
related goods and tastes, the
table includes two other important
shift factors, population and special
influences.

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Now that we know why demand curves slope downward and
how they shift, let's make an important distinction regarding these curves.
The distinction between a movement along curves versus a shift of curves.
This figure illustrates a movement along the demand curve for pizzas.
In the figure we go from point a to point b, because
the price of pizza has fallen from $3.50 per slice to $2.00.
In this case there has been a change in the quantity demanded.
In contrast this figure illustrates a change in demand.
This might happen if incomes rise or in the much more
unlikely case that pizza is proven to be a miracle health food.
Note that for a given price, such as $3.50 demand increases.
In this case from three to five slices.
As we shall see later, making this distinction between
the quantity demanded and a change in demand is important.
Because it helps us pinpoint the source of a change in the market.
The last point we want to make about the market demand curve
is that it is the horizontal sum of the individual demand curves.
That's bout a mouthful and a mindful, so let me repeat that.
The market demand curve is the horizontal sum of the individual demand curves.
Why do we want to know this?
It is very useful particularly from a marketing point of view.
To understand how a single market demand curve comes from
the very many different tastes and preferences of individual consumers.
Let's turn now to the supply curve.
It depends, perhaps most obviously, on the firm's ability to produce.
They transform factors of production like raw
materials and labor and capital into consumable goods.
However supply also depends on the individual's decisions
to supply the factors of production to begin with.
That's why later on, we'll spend a whole part of this
course just studying how wages and rents and interest
rates are set in the labor, land, and capital markets.
Now in explaining supply let's start with the business
analog to the law of demand on the consumer side.
This is the so called law of supply.
And we can illustrate it using this supply schedule for corn flakes.
Why don't you try first drawing the supply curve from this data.
Now, does your corn flake supply curve look like this?
Again, did you label your axes correctly?
I'll bug you about this.
Because I've found that students often forgot to label
not only their axes, but the curves, as well.
More often that not, this leads to confusion.
So, always label everything in your graphs and you will be way ahead of the game.
Anyway, in this figure, firms will produce no corn flakes at all if the price is only one
but they will produce 18 million boxes if the price is five.
The implication then of an upward sloping supply curve is that
the lower the price, ceteris paribus, less units firms will produce.
And the higher the price, holding other things constant, the more firms will produce.
This is the law of supply.
As with demand curves, there likewise are shift factors that influence the supply curve.
One of hte most important is technology.
Suppose your company comes up with a new cost-saving computerized process for making cornflakes.
What do you think will happen to the supply curve?
That's right.
It would shift outwards, meaning that for

a
given price, say at point b, supply
increases.
This is a change in supply, and remember,
this is different
from a movement along the supply curve
from a change in price.
Now how about another shift factor.
Input prices.
Suppose the price of labor or
raw materials increases for corn flakes
manufacturers.
What happens now to the supply curve?
That's right.
It shifts inward so you supply less at a
given price.
Still a third important shift factor is
government policy.
This can be a very big cost factor for
businesses.
For example if the government imposes
stricter
environmental regulations, manufacturers
will see their cost rise.
And the supply curve will shift inwards.
While such regulations will improve the
quality of the
air and water, they will also make goods
more expensive.
Such regulations as well as others for
health and safety, may even put domestic
producers of things like, say, automobiles
and
steel, at a disadvantage to foreign
competitors.
Adversely, if Congress removes tariffs and
quotas on, say, the auto
industry, the supply curve will shift
outward as auto imports increase.
This table summarizes the major shift
factors
using the automobile industry as an
example.
Each of these shift factors will cause a
shift in supply.
Whereas a change in price causes a
movement along the supply curve.
Please study this table carefully before
advancing to presentation.

Now let's get to the really fun stuff, showing how the forces of supply and demand lead to a so-called equilibrium in the market and thereby set the market price.
And let's start out by defining what an equilibrium is.
The concept itself comes from physics. Specifically classical mechanics.
To say something is in equilibrium is to say that the dynamic forces pushing on it cancel each other out.
In supply and demand analysis, equilibrium means that the upward pressure on price is exactly offset by the downward pressure on price.
The equilibrium price is the price towards which the invisible hand drives the market.
Let's illustrate this point with this figure.
Here we marry the supply and demand curves that we developed in our corn flakes example.
Note that where the two curves cross, the price is 3 and the quantity is 12.
Now, my claim is that through the forces of supply and demand, this is where the equilibrium price is going to be.
And let me prove that to you with a couple of experiments.
Let's first suppose that the price is 5 instead of 3.
In this case, firms are willing to supply 18 million boxes of corn flakes, but consumers demand only 9 million at that price.
At this price then, we have a surplus in the market.
An excess of quantities supplied over quantity demanded.
This surplus by the way, is equal to point b in the curve minus point a, or 9 million boxes.
So what you think happens next?
You guessed it.
With all those extra boxes of corn flakes piling up in their warehouses, firms will start lowering their price, and they will keep lowering it right up until a point where the surplus disappears at point C in the graph.
Now, how about instead of the price being too high, it starts out too low in the cornflakes market, say at 2 instead of 3.
In this case, consumer will demands 15 million boxes, but firms will be willing to supply only 7 million boxes.
In this case, we have a shortage of 8 million boxes.
A excess of quantity demanded over quantity supplied.
So what you think firms are going to do in this situation?
With consumers clamoring for their product, the best guess is that they will raise the price and they will keep on raising the price right up until it reaches the point where demand and supply are in balance in the market clears.
By now you should be getting to see just how powerful the apparatus of supply and demand is in helping us to predict changes in our market system.
For example, suppose a drought in the Midwest severely damages the wheat harvest.
Since wheat is a key ingredient of bread, this will shift the supply curve for bread to the left.
This is illustrated in this figure.
Where the bread supply curve has shifted from S S to S prime S prime.
Note however that the demand curve has not shifted.
This is because people have the same desire for their daily sandwich whether the harvest is good or bad.
So what do you think happens next?
Well, the bad harvest causes bakers to produce less bread at the old price.
So quantity demanded exceeds quantity supplied.
The price of bread therefore rises encouraging production and thereby raising quantity supplied.

This simultaneously discourages consumption and lowers quantity demanded.
And the price continues to rise until at the new equilibrium price, the amounts demanded and supplied are once again equal.
This new equilibrium is founded E double prime.
The intersection of the new supply curve, S
prime S prime and the original demand curve.
Thus a bad harvest or any leftward shift at the supply curve, raises prices and by the law of downward slope in demand, lowers quantity demanded.
In contrast, suppose that a new baking technology lowers costs and therefore increases supply.
This means the supply curve shifts down in to the right.
Try drawing this curve, and you see why the equilibrium price
is lower and the equilibrium quantity higher at E double prime.
This table summarizes the effect of price and quantity of different demand and supply shifts.
Try and replace the question marks with up or down arrows.
Does your table look like this?

[MUSIC].
Now let's go back to our bread example to shed
further light on how to interpret changes in price and quantity.
Suppose you go to the store and see that the price of bread has doubled.
Has the demand for bread risen?
Or has bread become more expensive to produce?
The correct answer is that without more information, you simply don't know.
It could be either one, or even both.
In fact, economists deal with these sorts of questions all the time.
When prices of quantities change in a market, does
the situation reflect a change in demand or supply?
Sometimes in simple situations, looking at price
and quantity simultaneously will give you a clue.
For example, a rise in the price of bread accompanied by a
decrease in quantity suggests that the supply curve has shifted to the left.
However, a rise in price company by an increase in quantity indicates
that the demand curve for bread has probably shifted to the right.
Let's use the supply and demand framework to illustrate some of
the implications of introducing artificial price control into the free market.
At different times in our nation's history, different types of price controls
have been imposed either on specific products or on the entire economy.
For example, during the 1930s, America's farmers experienced great hardships from drought, pests,
and crop failures to the side effects of the Great Depression.
In response, President Franklin Delano Roosevelt's New Deal began a
program of price supports for many of America's agricultural products.
From milk, corn, and wheat to peanuts and sugar.
These price support programs set a price floor for the farmers' crops and commodities.
If the market price fell below this floor, the government would make up the difference to
the farmer, in essence, by buying up any surplus.
This figure illustrates such a price floor for milk, as with all our
graphs price is on the vertical axis and quantity is on the horizontal axis.
Note that the market price is $1.30 per gallon, but the price floor is $1.50 per gallon.
The end result in
this case is a surplus of 10 million gallons of milk.
Now, let's do another example, this one for a price ceiling.
During World War II, as part of the war effort
the U.S government instituted price controls on most consumer goods.
Let's look at what happened in the market like that for bread, where we'll
assume that the market price was $0.35 a loaf but the price ceiling was $0.25.
Clearly there is a shortage in the market equal
to the difference between point A and B.
The way that the government address the shortage was to ration bread supplies.
In other words, rather than simply take your money to them marketplace and buy bread,
you had to first get a ration card giving you the right to the purchase.
The interesting thing about this allocation
mechanism is that in the presence of price controls and shortages, there can be
a very different distribution of bread supplies.
Put another
way, in a free market, it is the product price that rations supplies, so-called rationing by the purse.
However, with price controls, it is the government
that can control the for whom goods are produced.
In this regard, in 1974, the nation experienced a different kind of rationing.
When the government put a ceiling on prices
at the gas pump in response to the Arab

oil embargo.
People had to wait in long lines to buy
gasoline.
In this case, no ration card was necessary
to buy
gas, all you had to have was time, lots of
time.
[MUSIC].
Let's now take stock of what the market
mechanism accomplishes.
By determining the equilibrium prices and
quantities
of all inputs and outputs, the market, not
the government allocates or rations out
the scarce
goods of the society among the possible
uses.
What goods are produced?
This is answered by the signals of the
market prices.
High oil prices stimulate oil production.
Whereas low food prices drive resources
out of agriculture.
Those who have the most dollar votes have
the greatest influence on what goods are
produced.
For whom are goods produced?
The power of the purse dictates the
distribution of income and consumption.
Those with higher incomes end up with
larger houses, more clothing, and longer
vacations.
And backed up by cash, the most urgently
felt needs get fulfilled through the
demand curve.
Even the how question is decided by supply
and demand.
When corn prices are low, it is not
profitable for farmers to
use expensive tractors and irrigation
systems,
and only the best land is cultivated.
When oil prices are high, oil companies
drill in deep
offshore waters and employ novel seismic
techniques to find oil.
Let's end this lesson with some examples
of how the supply and demand
framework, can help you save or make money
in your professional or personal life.
Suppose then in your daily reading of the
newspaper, you notice a small story on
the back pages about the possibility in
the coming year of another El Niño
condition.
For some reason, this story peaks your
interest.
So you get on the internet and do a little
more digging and
find out that during the last El Niño,
winter temperatures were unusually warm.
While rainfall fell at record levels and
flooding plagued much of the country.
You also discover on the web page of a
highly respected Australian meteorologist
that the chance of El Niño happening in
the coming year is quite high.
How might you use all this information?
Well, it first depends on who you are.
Suppose for example, that you're the chief
executive officer
of a home heating oil company in Boston.
Such news might be your first alert that,
because of a warm
winter, the demand curve for your product
may shift dramatically inward like this.
So, in response, you might stock lower
inventories
of oil and plan for a leaner work force.
Or suppose that you're a stock broker in
Florida, managing several billion dollars
of pension fund money.
You might decide to sell your heating oil
stocks and move some of
those investment funds in the companies
that
provide things like pest-control and
allergy medicines.
This is because where there's unusually
high rainfall, the
flowering plants that cause allergies
increase their growth dramatically.
This shifts
out the demand curve for allergy
medicines.
By the same token, this increased plan
growth provides fodder for the food chain.
With one of the by products more pest
likes
rats and fleas, thereby increasing the
demand for pest control.
As a homeowner in Los Angeles, you might
also take some precautions regarding your
leaky roof.
If you wait too long to call a roofer to
fix it, you may find yourself in
a very long line paying higher prices as

the
demand for roofing skyrockets in response
to torrential rains.
So you bite the bullet and get the roof
fixed now in
a much cheaper price than you might have
to pay a few months.
Finally, you may find yourself in a more
perplexing situation
where both the supply and demand curves
are likely to shift.
In such cases supply and demand analysis
can be especially helpful in figuring out
the net effect of such changes on
price, and thereby help dictate your
business plans.
For example, suppose you run a large chain
of coffee shops in the Pacific Northwest.
On the one hand, you know that El Niño may
well drive up the
cost of cappuchino, because it is likely
to lead to a bad coffee crop.
On the other hand, you also know from your
experience with the last El
Niño, that during unusually wet weather,
people drink a lot more of your product.
So what are you going to do?
Well, you might go into the coffee futures
market and lock into a lower coffee price
early,
essentially betting that prices will rise
later.
Be careful though, El Niño might fizzle
and you might be wrong.
At the same time, if you decide that
any demand effect will overpower a change
in supply.
Like in this figure, you might decide to
accelerate the construction of
the 50 or so more coffee shops you have on
the drawing boards.
Of course in business, it's all a gamble,
but as a Chinese philosopher once said
chance favors the prepared
mind, or in this case chance favors the
prepared micro economist.
In the next lesson will delve more deeply
into the
mysteries of the demand side of the supply
and demand framework.
In the meantime, please remember that
economics is
not something to memorize but rather
something to conceptualize.
So as you study it, think about
it too.
Your job and your business just might
depend on it.
[MUSIC].