Week 9 Transcript

What?
That's.
Bring it here.
Yeah.
And.
Yeah.
Okay, let's get started.
Good afternoon.
Can you hear me?
All right.
Okay.
So today we're going to talk about what governments can do to help stabilise or destabilise an economy.
And to say that governments have an outsized impact on the economy is probably an understatement.
Now, let's just review exactly what happens when, um, uh, you have, uh, you know, an economy in trouble.
So we have.
Um, a labour demand curve, labour supply curve and a labour demand curve.
Let's just say, okay, this is this is wage rates and aggregate employment just drawing what we have.
And so here we see that this was during the recession.
And just a reminder because all the graph is from the previous lecture, you see the complexity of the central bank or the fed if you're in the US or Bank of England is, you know, uh, sorry, this is labour supply, labour demand.
Hey, is, um, how am I going to how is the fed or the central bank going to adjust?
Get the economy out of a recession, right?
And just to be clear, you know, pre-recession, a little bit of, uh, increase in labour demand will start to shift out, uh, this curve and then create more aggregate employment and hence GDP.
But if you overdo it, let's say you become here, uh, then at some point, um, you know, this becomes a vertical line and you are not going to stimulate much more employment, but just more inflation.
Okay.
Uh, just to avoid confusion, let me just make this a little bit more.
Sorry.
This is gonna be, um.
Just to be more clear, we have the downward wage component and then an upward sloping.
Let's just call this, um.
A vertical line and this is a labour demand.
And at some point you can reach a point where.
There's only inflation that you create by stimulating too much the economy.
And this price is just simply go up.
This is just a reiterating what we learned last last class.
And so the complexity of the central bank is how much should I stimulate the economy or how much should I, um, contract the money supply if there's overheating?
Now, that seems to be a difficult task because, you see, if we overdo it and there's going to be too much inflation, right?
Maybe some of what we're seeing after 2020, the recent bouts of inflation is too much stimulus potentially.

We're going to explore that.
Um, and maybe uh, uh, you know, at some point,
uh, we have hiked interest rate to, uh, to, to
little you know, some people say the fed is behind
the curve in the, in the US, meaning that it's
raising interest rate too slowly in response to the, uh,
rising inflation.
And that's what we're getting a more inflation than, uh,
more overheating than we should observe.
So the point here is just to say that it
is, um, a difficult task.
And we're going to try to figure out, you know,
what is a good guideline to think about these central
bank policies.
Okay.
So the first important idea here is what we call
countercyclical policy.
Countercyclical means acting against the cycle.
Right.
So what the government should be doing here is that
when the economy is in a recession or in a
downturn, you should have expansionary monetary and fiscal policies.
We haven't talked about fiscal policies yet.
That's what we're going to do in the next lecture.
Right.
We've already looked at how expansionary or contractionary monetary policies
work.
We're going to look at that even more specifically now.
But the whole idea of countercyclical policies is to keep
output stable.
Um.
If we say something like pro cyclical policy, what does
that mean?
That means that when the when economy is doing well
or expanding, you are also conducting expansionary policies.
That's pro cyclical policy.
And we can see why that's problematic.
It means that in boom times, governments spend more.
Right.
And in recessions they spend less.
Now that's bad, right?
That is not good policy, because you want to be
spending more in downturns and then spending less when the
economy is doing well.
That's countercyclical policy.
And we don't see we see often a lot of
governments doing not countercyclical policies but post cycle policies.
Think about government election cycles, right?
Especially in, in, um, developing countries, you want to be
elected, right?
You raise government spending, you know, raised social welfare and,
uh, I don't know, cut taxes when the economy is
doing pretty okay.
Not because you want to act as a stabilising force
for the economy because you want to get elected, right.
Or when the economy is doing really well, you spend
more, right, because the government has more resources.
Okay.
That's not these are not, so to speak, good policies
in the sense they don't lean against the wind.
So in other words, when they're booms, you want to
cool it down.
And we'll see why that's so important.
Now just a reminder before 2020, the onset of the
pandemic, the federal funds rate or in the US was
above zero.

It was that 2% something, 2.25% or 2.5%.
And that gave you gave it room to lower it
once the pandemic hit.
But think about the case.
If it were already at a very low rate, then
there will be no further room to cut it right?
So leaning against the wind in that sense is very
important for governments to be very disciplined and act, counter
and conduct countercyclical policy.
So you spend more in bad times and spend less
in good times.
Uh, no matter how counterintuitive that is.
That is a critical aspect of critical point of what
we're learning this week how to conduct counter policies, counter
fiscal policies.
And then we're going to look at exactly how that's
done for monetary policies.
And really important part of this is guide inflation.
Now what's really interesting about teaching this course or learning
this course at this moment is that there's been lots
of unconventional monetary policy ever since the Great Recession ended
in 2009.
Right.
Lots of textbook policies have been, um, have been insufficient,
uh, tools.
And there's been other unconventional policies that we've seen.
So it's very, um, interesting to put it in this
kind of context.
And we'll talk a little bit about that as well.
So just as a reminder, first of all, this is
a de trended uh, GDP, uh, GDP, uh number okay.
For the US between 1929 2000.
Now, we've already talked about the fact that there are
lots there's been quite a few recessions, okay.
Busts and other times are considered to be normal times.
And here if we see the cyclical components and what
we want to do is to smooth it out or,
um, to, to conduct these policies to make output stable,
employment stable, uh, this is what the government can do.
Okay.
So as we mentioned, you know, in essence, expansionary policy
in the end, now, despite the fact that there are
many debates on what is causing these economic fluctuations or
business cycles, they kind of converge on the shifting of
the labour demand curve, right?
Recessions, labour demand curve shifts, the left um booms, labour
demand curve shifts.
Right.
So when the labour demand curve has shifted left, what
you can do from expansionary policy is to shift it.
Right.
And um, and that's by conducting these expansionary policies whether
you're monetary or, or um, uh, um, uh, fiscal policy.
Now, why would you ever want to contract an economy?
Right.
This is exactly what's important is it goes really both
ways.
And this requires a lot of discipline on the government's
front because of the first graph I've shown you when
the economy is overheating up to a point when you
have already maximal employment, further expansions of the economy will
produce what it will just produce inflation.
It's not going to produce more GDP or output because
you're already at maximum level of employment.
So keeping the economy in a boom time is also
problematic.

Now, another reason why that's problematic, and this is something that has been very debated recently, is that these keeping interest rates for too low for too long also does one one more thing.
It's not only just about expanding the labour or shifting the labour demand curve, but as we mentioned last class, when interest rates are low, your asset prices are high, right.
Because all these asset prices are discounted by the interest rate.
So when asset prices are high, people believe that those people, those are the wealthy people who own these assets, including housing and stock prices, they disproportionate.
Gain and benefit.
And a lot of an a big debate was, you know, we're going to look at quantitative easing or QE.
Is that as massively shifted the distribution of income or wealth towards the rich people?
Interest rate had been low.
Their asset prices have risen even during after the pandemic.
It's really skyrocketed.
So the problem of keeping an economy too hot for too long has a lot of downsides.
And we talked about Alan Greenspan, which some believe paved the pay path to the financial crisis in 2007 because he kept interest rate for very, very low between 2001 and 2005, when supposedly he was supposed to hike the interest rates.
Right.
We're going to try to learn about when or what's the basic guideline or a rule of thumb for when you should be hiking, when you should be easing.
So that's why we want to have appropriate contractionary policies to keep the economy from heating.
So less inflationary pressure and maybe all these other distributional problems as well.
Okay.
Um.
So this is exactly what we said.
And also to keep inflation at at bay.
Now there are primarily two kinds of policies.
Monetary.
We haven't talked about fiscal policy at all.
We're going to talk about that.
We spend a lot of time talking about the banking system and what the fed and the Bank of England and Bank of Japan can do.
And so we're going to focus on that and bring everything together today.
And so just a reminder or um, a recap of how expansionary monetary policy, first of all, works to expand the economy.
Okay.
Just in case people, uh, needs a refresher refresher on this.
So first of all, remember that the fed the fed really cares first and foremost about one interest rate, which is the short term interest rate.
Right.
That's the first, first, uh, tool.
Okay.
And that's often overnight rate where banks lend to each other.
Right.
At that rate.
But we know that short term interest rates, when you

reduce short term interest rate, when you change the short term interest rate, it also changes the long term interest rate, because long term interest rate is simply a collection of short term interest rates rolled over these these debts.
So in general, lowering the short term interest rate also means your average long term interest rate also falls.
Okay.
And then so here is more specifically so okay.
So we'll get to we get to this part more specifically.
But then let's suppose that long term interest rate falls then uh we care.
So so remember that the short term interest rate matters because banks will start to potentially lend out.
But then we'll talk about that more specifically.
But just from the household side as a borrower, um, you will start to buy more, you know, things like durables including autos and maybe even potentially housing.
And this kicks off around of labour demand shifting to the right.
Right.
So that's the general process of how changing policy can lead to an expansionary impact.
Um.
Now, how does it actually lower the federal funds rate?
We talked about increasing.
You know, there are three ways of reducing or increasing the federal funds rate, um, uh, primarily through changing the level of reserves.
So changing the supply reserves.
Right.
Or you can change the demand of reserves.
And that actually, um, leads to a lower federal funds rate.
The more specifically, look at this, uh, what's called an open market operation.
And that's what the fed does in terms of trying to increase liquidity or increase, uh, money supply.
So more specifically, what is this operation?
So first of all, how do you increase the supply of reserves?
Right.
Uh, more specifically, when we talked about shifting the supply curve, um, the open market purchases involves, uh, buying or selling uh, uh, bonds to banks.
Okay.
So think about it this way.
You're the fed, they're Citibank.
Okay.
You want to expand the level of reserves and hence, and in turn, lower the federal funds rate.
What do you what do you do?
Do you buy or sell bonds to Citibank?
You.
You buy bonds, right?
You buy bonds.
And then in turn, Citibank gets more money.
So you you take away the bonds and increases money.
Now.
Does the central bank actually use some money somewhere else to buy these bonds?
No.
With one click electronically, it just creates more reserves.
Okay, so it's not actually taking cash and saying, go into Citibank.
You know, let me buy the bonds.

And here you have this cash.
It's just that in the reserve, Citibank just has additional,
let's say, about $1 billion worth of bonds.
Just one click.
Central bank money is created.
And you have $1 billion more worth of bonds for
Citibank.
So in that sense, this is why when we talk
about the central bank printing money, it's not actually going
to print money, right?
Bank notes.
It's just using that one clip, creating more reserves.
Okay.
And it's limitless.
Right.
You can do as much as it wants in its
power.
Right?
There's no limit for, for for that kind of just
clicks to increase the reserves.
Right.
So for the central bank that's actually how it's done.
So if it wants to decrease the supply of the
of, of reserves through the open markets, open market, uh,
operation, then it sells bonds and takes away these reserves.
Okay.
But again reserves are not part of M2.
Remember that M2 money supply.
The aggregate amount of credit in the economy does not
include bank reserves.
It's more like checking and savings deposit and all these
things when it actually gets to you guys with big
institutional money.
So how does that work?
Um, okay.
So how that works before we get to, uh, Citibank,
looking at the balance sheet is that once these banks
suddenly have this, let's say, $1 billion more worth of
reserve, what does it do?
It can potentially lend it out.
Okay.
It can issue more loans because it only has required
reserve ratio of whatever, whatever was 10%.
Now you have more reserves.
You can lend, um, 90% of that out.
Now, once you lend 90% of that out, somebody who
borrows it will eventually put it in another bank's deposits
or spend it or do other things, and then that
becomes part of M2.
Right.
So bank reserves, which is not part of M2, then
becomes loans and loans becomes deposits or other kind of,
you know, spending.
And that is part of M2 okay.
So that's how it works.
Now let's look at the balance sheet.
Now you're not going to see this.
Um, but hopefully you'll have your laptops or I'll read
it out.
But it's very simple.
So this is the balance sheet of the fed okay.
Again on the balance sheet we have uh assets and
liabilities.
Remember that assets or what the central bank owns, just
like any other banks.
Are things like bonds or other kind of maybe longer

term investments.
We're going to see that.
Okay.
And so here we just have treasury bonds government a
US government bonds and other types of bonds.
This is before the anything happens.
This is the the balance sheet initially.
And this adds up to $2 trillion.
Okay.
Now what is the central bank's liabilities or what does
it owe.
Remember assets is what it owns and liabilities.
What is it owes?
What it owes is part of the currency, the reserves,
which is the bank reserves.
Right.
Or the currency, you know, kind of cash lying around.
Sorry, floating out in the economy.
Okay, is what it owes, right?
Remember that when we have a banknote of £100 or
£10, we have a claim on the central bank, Bank
of England.
Right.
This is what they issued a note, an IOU before
it was an IOU.
I owe you £10.
That's what the note is.
Right.
So we have a claim of £10 on the central
bank.
That's why this is called liabilities, right.
Of the central bank or the fed.
Is these cash right.
Cash or bank reserves.
And again these things to balance out okay.
So after the purchase of.
The bonds.
Okay.
From Citibank, what happens is by $1 billion, then, uh,
the Treasury bonds increased by $1 billion for the fed.
Okay.
Other bonds don't change.
So assets are £2,000,000,000,001 billion.
And what happens on the liability side?
What reserves increase by 1 billion.
Remember that we want to increase the reserves because.
And then that's how we did it, is to purchase
the bonds.
So reserves rise by 1 billion.
Everything else doesn't change.
So these things balance okay.
Now let's look at what happens to Citibank.
Now Citibank before had $100 billion of reserves as part
of its assets.
This is what it holds in the central bank or
the fed and other kinds of investments amounting to $900
billion, so a trillion in total.
And then it takes in deposits.
So deposits of $800 billion.
So a thousand, -800 billion or assets my minus liabilities
is shareholder's equity okay.
200.
And these two things balance out.
Right.
So after the, um, after, uh, Citibank sold, uh, the
bonds to the central bank, then reserves increased by a

billion.
Now bonds decreased by a billion.
And guess what?
Nothing happens on the liability side, right?
Because it didn't take him more deposits, depositors money.
It was simply an increase by a billion by reserves,
offset by a fall in the amount of bonds of
a billion.
Okay, so that's Citibank's, um, uh, a balance sheet.
Okay.
So just to recap, this is trying to expand the
reserves so that we can lower the federal funds rate.
Right.
And it conducts this through an open market operation, what's
called open market operation, by buying and selling bonds with
banks that hold reserves or reserve accounts at the central
bank.
So if you want to expand the level reserves and
lower the federal funds rate, the fed purchases bonds.
If it wants to lower the reserves, it sells bonds.
And this is what happens to the the balance sheet.
Um, okay.
So now most of the time.
Reserves only amount of 40 to $80 billion.
And guess what?
After the 2007 to 2009 recession, it went up to
$2.5 trillion.
Okay, so I have a graph here somewhere later on.
But, um, let me see if we can show it
now.
Uh, to talk about this.
Um.
Oh, yeah.
Here.
Okay, so at this point, you really don't see much
going on.
This is the 40 to $80 billion of reserves held
at the central bank, basically just meeting the requirements.
And after the crisis, it went up by that much.
Okay.
And we're going to see exactly why.
So this is extreme dramatic expansionary policy.
Extra expansionary monetary policy.
But that wasn't only it.
One of the reasons for why it increased so dramatically
was that interest rate at that time couldn't fall below
zero.
So they kept on buying other kinds of assets.
We'll talk about in terms of quantitative quantitative easing.
Okay.
So.
So at this point you can see that these level
reserves, um, expansion are changing.
The supply of reserves was a main tool to lower
the federal funds rate.
And in response to do this countercyclical policy to deal
with the recession.
Now the point is, how much should the fed lower
the interest rate?
When should I lower the interest rate?
How much should I hike the interest rate?
Right.
It involves trade offs and it's a very delicate and
skilled business.
So we're going to look at what are these trade
offs and how what is the rule of thumb.

So first of all, we said about what we said
about the US is that a basic has two mandates,
right?
The first thing cares about is inflation.
Okay.
And the second thing it cares about is keeping unemployment
at bay, or reducing or keeping employment at the maximum
that is possible.
These are the two objectives.
Again, this is not necessarily true for all central banks
around the world.
Some of them care more also about growth.
Some of them care about financial stability.
Some of them call care about redistribution, some of them
care about the climate as well.
But for the US and for Western economies, primarily inflation
and, um, and unemployment.
Now the trade off is that.
Yes.
Of course the fed would like to stimulate the economy
during a recession.
But as I've just shown you in the first graph
we looked at looked that too much.
Too much stimulus can cause inflation to rise.
Right.
And that's a problem.
So how does it balance this these two things.
Now a Taylor rule by John Taylor from Stanford is
something that you're going to hear about and something that
you can use potentially to gauge what you think about.
What the inflation or the fed funds rate or interest
rate the US in the US would be.
Okay, so first of all, the Taylor rule says two
things.
Well, first of all, we care about two things.
One is inflation rate and one is output.
Right.
So um, the the the Taylor rule said the Fed's
federal funds rate should be some long run target.
Okay.
Which we're going to talk about.
Now the long run target.
Okay.
It should be something above zero.
Right, because that gives the fed room to lower it
in case of recession.
If it's at close to zero, there's no policy to
expand, right.
So it should be some long run target, let's say
2 to 3% depending on where you are.
And then there is some positive way 1.5 times the
inflation rate minus the inflation rate target.
So what that means is let's say we have an
inflation rate target of 2% okay.
If the inflation today is at 5% or above the
target, right by 3%.
Now, if we're above the target, does that increase the
federal funds rate?
Should we raise the federal funds rate above the long
run level?
Yes we should.
So how much?
Well, 1.5 times three.
Okay.
So that's 4.5.
Okay.

Um, uh, above above the long run federal funds rate target.
Now, the second component is we also care about low output or output gap.
So output gap here is what is the GDP current GDP minus the trend or what's the percent deviation from the trend.
Now remember that we have a smooth trend and there deviations around the trend, right?
So if GDP is somewhere below the potential GDP that means you have a negative output gap.
So output is below its potential level.
So if this is negative.
Then that this is negative.
And so this means it should lower the federal funds rate.
Okay.
Now, if we have a pretty much a booming economy, it's a little bit overheating and GDP is above potential GDP.
Then we should also raise the federal funds rate to cool it down.
Okay.
So and this is, this is going to be um, this output gap is in percentage point.
So everything is in percentage points.
So what it says is that for every additional percentage increase in the inflation rate, the federal funds rate is going to respond by raising it by 1.5 percentage points.
So if inflation is 3% above okay, so at some point what the UK was what 10%, 8% inflation rate 8% above 2% is 6% 6% times 1.5.
Right.
Nine percentage points more added to the interest rate or long term interest rate.
So you really want to hike the interest rate.
What this also says that they really care about inflation.
Right.
You really care about inflation because compared to output a 1%.
Uh, for every um, uh, 1% increase in the output gap.
So output is, um, 1% above the potential rate.
You raise the federal funds rate by only 0.5%.
Okay, but if inflation rises by one percentage point, you raise the federal funds rate by 1.5%.
So which which do they care more about?
According to Taylor?
Will they care more about inflation.
Right.
So they really respond a lot to inflation.
Now again that weight could change from country to country.
There are lots of countries don't have such a big inflationary um, uh or not, you know, so scared of inflation or concerned about inflation they could change these weights.
They care more about unemployment or output.
They can put a larger weight on this.
Right.
So the Taylor rule is very useful in helping you guy.
What should the federal funds rate.
So let's take an example.
Now in 2014.
After the recession okay.
So let's let's give it a little bit of background.
The 2000, 2009 7 to 2009 big financial recession, right?

Federal funds rate.
It's the lower bound.
It can't even lower it much further.
And at that time, employment was slowly recovering to normal.
The economy really took a long time to recover.
And so the government was committed to have a lower
interest rate for a longer term period.
We're going to talk about this in just a little
bit.
This kind of notion of forward guidance, trying to guide
you guys to think that I'm going to be committed
to keeping the interest rate low for a long period
of time, okay.
But at some point, um, uh, inflation, um, um, the
economy.
Okay.
So let's look at what happened in 2014.
The economy was slower as slowing, was still very slow
to recover.
So it was still about 5% below its trend GDP
okay.
Inflation was only about 1.5%.
So that missed the 2% target okay.
So this is 1.5%, -2% times 1.5 okay.
And 0.5 times -5% because gap is 5%.
And the US had a federal funds long term target
of 3.5%.
Okay.
So you add this up and guess what the federal
funds rate is.
It's close to zero.
It says that it should really lower the federal funds
rate.
Why?
Because of this really big output gap.
So output was still 5% less than what its potential
output would be.
So this prescribes the fed to cut interest rate or
to keep interest rate at around 0.25%.
And that was just about what it was, right?
A little bit below 2.2 0.25%.
If you take a graph.
I haven't been able to do this for this slides.
But if you look at the graph of federal funds
rate and actual sorry, the Taylor rule and the actual
federal funds rate, you know, they are they are quite
close.
I mean, not perfectly, but they're close.
So that should be a good rule of thumb for
what your expectations of the interest rate should be, or
how the fed should be setting the interest rate.
Um, okay.
So.
That's the open market operation is kind of the main
tool to change the reserves and the federal funds rate.
But the fed also has a variety of other rules.
Okay.
And this is partly part of this we have already
talked about.
Um.
So, um, the required reserve reserve requirement is the percentage
of deposits that must be held at the reserves at
the fed.
Now, uh, after uh, 2008, the fed started to pay
interest on the deposits in 2008.
And so banks, which had held deposit reserves at the

fed received um, uh, an interest rate.
Now, of course, you can change the reserve requirement to expand or contract the level reserves.
Also change the interest that you pay on the reserve.
You've lowered the interest.
You pay on the reserves.
The demand for reserves for the banks also changes or were reduced.
So you can change not only the supply but the demand for reserves.
Okay.
So this is number two.
And here is what's called a discount window.
Now discount window as an alternative to the federal funds market where banks are borrowing from each other.
The discount window is when the fed directly lends to the bank.
Okay, so during some of these major banking crisis, the fed acted as a lender of last resort.
Now you're going to hear that a lot.
And this is a very important concept.
It can actually stem a crisis from from growing.
Why is that.
So at some point, you know, you're a big bank and you might be collapsing like Lehman.
Um.
No, no, no other banks will want to lend to you, right?
Not even not even the federal funds market, right?
They sense some instability.
And if they don't want to lend to you, then you're done.
Okay.
Actually, and that's what exactly what happened to Lehman.
Because the government decided not to save Leven.
But alternatively, it can just go directly to the fed and borrow from the discount window.
Okay at a different kind of interest rate so that, um, can so that ability to access this emergency liquidity funding can sometimes backstop a panic, because if they know if the creditors know that you or the depositors know that you can get access to this amount of liquidity, and these could be pretty large, then they won't withdraw these funds, right?
So always having a lender of last resort is very important for backstopping these panics.
Now, what happens if the government decides that they're not going to lend to you or sorry, the fed decides, or the central bank decides they're not going to lend to you?
Or if that amount is not enough, then that's kind of you're in a major liquidity crisis.
But the presence of this.
Uh, is very, very important.
Now, uh, during the financial crisis or the Great Recession, both the UK government and US government did all kinds of stuff, all kinds of things to, um, to backstop this, uh, this crisis.
So I'm just looking at this list.
Bank of, uh, Bank of America received financial support and capital injections from the US government through Tarp.
Citigroup did.
Wells Fargo.
AIG is an example from the textbook.
Um faced severe financial difficulties, and there were all kinds of credit guarantees and loans and all kinds of, you

know, the government rallying all these kind of players together
to, to make these loans.
Um, JP Morgan acquired, um, Bear Stearns.
And then so, you know, in some sense that prevented
another bank, major bank from falling in the recent in
the recent banking crisis in the US last spring, JP
Morgan also bought, I think it was First Republic Bank,
uh, again, then backstopping another crisis from happening.
Right.
But the government can also do a lot apart from
just these, um, these very these changing these reserves to
backstop this, this crisis.
And that's what that's one of the really important roles
of the central bank.
Now the fourth.
And here we're hitting an unconventional monetary policy is when
economy hits the zero lower bound.
Okay.
Now there are a few governments in the world at
that point that was paying negative interest.
Think about the consequences of negative interest.
Um.
First of all, what you can do is you can
go to the bank and borrow, right?
Say you borrow, um, uh, let's say your your your
company can borrow £100 million.
Okay.
Interest rate is set at -1%.
What happens?
Well, you take out this 100 million loan and after
the end of one year, how much do you have
to give it back?
99.
So you just put it.
You don't.
Well, if you have a place to put this on
under $1 million, that is an assumption under your mattress
rather than another bank, then you can actually make $1
million, right?
In turn.
So negative interest rate might not make so much sense.
Right?
There's a degree to which you can lower the negative
interest rate.
So Japan had it.
Switzerland had it for quite a few years.
The Bank of the Swiss National Bank had a negative
interest rate for a number of years, I think until,
you know, from 2009 to 2015.
Well, one thing is now, can you do it with
depositors, with you guys?
For instance, I'm going to tell you, please deposit my
bank.
I'm going to give you a -1% interest.
You're not going to do that, right?
Why?
Because you can just hold cash.
Okay, now, that's not true.
With banks at the central bank, though, they are holding
reserves, right?
They can't take it out.
They can't put it in in terms of cash.
Right.
They can't.
They're just stuck.
Right.

If they keep it as reserves, they lose 1% every
year.
That's not true with depositors.
These banks can't do it with you guys because you
simply just wish to hold in cash.
There's only one trick here.
It's not really zero.
That is the bound.
It could be some small negative number.
Why?
Because you have nowhere to put it.
That's safe, right?
Not.
Not as a depositor, but also, you know, large quantities
of money.
If you don't park it in a bank, it might
be stolen.
It might be.
So you can think about this as a cost that
you would pay anyways to keep it secure, right?
So even if it's not zero, even at a small
cost, you'll be willing to park it somewhere safe at
a bank, right?
So.
The interest rate can't be too negative because that doesn't
wouldn't make sense to justify the cost, but it doesn't
have to be zero.
Okay, so this is why some banks or some countries
have lowered, um, lowered the zero or lower bound to
even below zero.
So this thing is pretty much invented by Japan.
Um, as we'll see, you know, Japan had a major
crisis and we'll see some of some graphs for this.
Um, but.
Um, when I hit the zero lower bound, there was
no other room to adjust this.
So what did the government do?
The government started to buy lots of other kinds of
assets.
Okay, so let's come back to this, um, US example
after 2009 or 2007, 2009, it started to buy lots
of long term bonds.
Mortgage backed securities.
Um, you know, Bank of Japan even bought, you know,
use money to buy, to prop up its stock market,
all these kind of assets.
That was not short term government bonds, which is what
we talked about in the open market operations, right, open
market operations about buying short term government securities.
They bought lots of long term stuff.
What's the point of that?
Well, first of all, they bought lots of long term
bonds to want to directly lower significantly the long term
interest rate.
When we talk about lowering short term interest rate, yes,
it eventually trickles into lowering long term interest rate.
But if you can directly a more significantly lower long
term interest rate, it helps lots of kinds of stimulating
activities.
Why?
Because lots of it is long term borrowing.
You know, when you're a firm, you go to a
bank, you take out long term loans to finance these
equipment.
You are you want to purchase a house, you take
out a long term loan.

So this can actually also have an impact on the
economy because you can have all these additional longer term
related activities by buying long term bonds.
So you can really change, um.
Long term interest rates more directly.
Um.
But here is something really important.
So if the long term expected real interest rate is
equal to the long term nominal interest rate minus the
long term expected inflation rate, because it's a real interest
rate that that we're interested in, it can actually do
two things.
Quantitative easing was about changing long term nominal interest rate.
And you can try to change long term expected inflation
rate.
Okay.
Now remember that inflation expectations of inflation is really, really
important right?
It's not just about the interest rate.
It's about what the people expect inflation will be tomorrow
because they expect really high inflation.
Inflation will be already high today because people will start
to hoard okay.
So a lot a large part of the job of
the central bank is to try to convince you of
its intended, you know, inflation rate, what it will be.
So for instance, if you're trying to lower the interest
rate, real interest rate in the long term, which is
what the fed was trying to do when it hit
the zero lower bond, you want to raise the long
term expected inflation rate above and beyond.
Lowering the long term nominal interest rate.
Right.
And how do you do that?
So there was this whole huge deal about forward guidance
that was also part of the unconventional monetary policy tool.
Now we're really kind of expanding way beyond the textbook
here, right?
Textbook is about open market operations and that's it.
In addition, the government, central government, it's our central bank
wants to convince you, coax you into believing them, that
we're going to try to have longer term high inflation
rate.
How we do that by saying we're going to keep
interest rate low, and we're going to keep easy money
for a long period of time.
And easy money translates into higher inflation, right.
Because there's more activity.
And so if you if I expect the central bank,
the fed is going to keep interest rate low for
a long period of time and this will be an
easy environment.
Inflation will pick up.
That's how you, um, change this expectations.
Forward guidance also applies to this, uh, to this thing
here.
Interest rate.
I'm going to keep it low for a long time,
okay?
I'm committed to keeping a low.
So at in 2015, even though the economy was, um,
sorry before 2015, by 2012, the economy was in the
US, was recovering very slowly.
The central bank went out, the fed went out to
say, announce publicly until we have an employment rate, unemployment
rate that has fallen to 5%.

You know, we're not going to raise rates or something
like that, okay.
Until inflation gets to a certain point, we're not going
to do something, you know, these kind of, um, kind
of these messages, this communication is really important because it
changes expectations.
And expectations change what happens today.
So forward guidance in terms of the future variables can
also change.
You know what happens to the interest rate today.
So that is also a part of the really important
um.
A part of this and how how do you create
this?
Inflation is again, once you start to have these stimulus
right and bank deposits, M2 starts to increase, then that
leads to inflation.
So if you expect that the fed is going to
keep interest rate low for a long period of time,
you can expect expect the inflation will be a positive.
Now contractionary monetary policy is just the reserve reverse.
Right.
And we talked about why you want to conduct a
contractionary monetary policies.
Um, when an economy is overheating.
So what you do is you raise interest rate, you
reduce borrowing, uh, and you, uh, slow growth through this
open selling of reserves to slow down this growth.
And this reduces inflation.
So when inflation gets too high, exactly what's happening now
the fed or the Bank of England raises rates.
Okay.
And they're also telling you we're committed to keeping the
rates high until inflation falls.
That's also forward guidance right.
Guiding you on expectations.
Okay.
So we talked about Japan.
And let me just mention here that Japan had an
additional problem.
Apart from the zero lower bound where nominal interest rate
was zero.
There in Japan there was no inflation but deflation.
So deflation meant that the real interest rate was actually
positive.
So even though the nominal interest rate was negative, it
was zero.
The real interest rate was positive.
If you have more deflation, then this will lead to
rise in a rise in real interest rate and then
continuous shift of labour demand curve to the left.
And you're in a worse recession, right?
You keep on lowering the interest rate and then you're
in a worse recession because of deflation.
And so this is Japan.
Look at Japan's, um, uh, interest rate.
So basically central banks interest rate, it fell dramatically to
zero over this period of time.
And this is just a longer period.
Uh, it kept long low for a very long period
of time.
And this is deflationary forces.
So inflation.
And we see these periods of deflation which really added
to the real, you know, real cost of capital.
And it created these problems even though the central bank

was desperately trying to lower the interest rate.
So again, we see this graph of um, uh, quantitative easing and quantitative easing amounts to a massive increase in the central bank balance sheet.
Why is that?
Because the central bank simply bought all kinds of assets, right.
Remember that we talked about the Citibank balance sheet.
It only bought short term government bonds.
Now they're buying mortgages.
They're buying long term bonds of all sorts.
And this is what happens when when the assets rise by that much.
This just means that the central bank balance sheet has exploded.
Right.
Because on the other hand it also creates that additional reserves, um, that balances out all the asset purchases.
Okay.
So by 2020.
Now, I mentioned in the beginning that thankfully by 2019 they had started.
So after 2015, the fed started to raise interest rates.
Remember the interest rate was very low for a long period of time because the US took a long time to recover.
But by 2015 they started to unwind this expansionary monetary policy, partly because unemployment was falling, partly because, you know, they wanted to prepare, give themselves more room for the next way around.
Now, sometimes political events can prevent the fed from acting.
Okay, so in 2015, when they wanted to rise, the emerging markets had a big problem.
So they didn't want to hike interest rate too much because that would affect the whole world.
And then the oil price shock came and then Trump came.
And all these elections sometimes can actually divert their attention from their normalisation.
But in any case, by 2019 federal funds rate was above zero.
So that would with the Covid being completely unexpected was lucky thing because then they can start to lower the interest rate.
Okay, so by 2020, if the federal funds rate was no longer 3.5 in the long, long run, but one point is a 2.5, this was the inflation was below target.
Okay.
So this means that you should lower rates.
And um, the um, uh, the, uh, the uh, the output gap was um, uh, -3%.
So during Covid, that meant that the interest rate had to fall back to zero.
Okay.
So, um, in that sense, um, this is exactly what happened with during Covid when the interest rate again hit the lower bound.
So last two graphs.
This is just a table sort of two last two tables, which shows you what's the combination of these output gap and inflation target to produce the kind of federal funds rate.
So for example if we have inflation on target no output gap.
Uh, this was the federal funds rate.

Uh sorry.
Inflation is inflation is below target.
This is the federal funds rate.
When inflation is above target this should be the federal
funds rate.
And the second table is just showing that inflation hits
all the target.
But this is where the output gap um goes from
minus four.
What it really want to lower federal funds rate and
goes to 5% where you're really a heated economy, uh,
above your long term output.
And then you should really hike, uh, interest rates to
5%.
So these are two tables that show you what the
Taylor rule should predict about where the interest rate should
be.
So in that sense, we kind of learned about when
and how and how much, uh, the central bank should
do, uh, to kind of stabilise the economy, caring about
two things inflation and output.
Okay.
See if there's like.
But.
Uh.
Are.
So.

I.
Maybe I.
It's hard to.
See?
The other.
Yeah.
But I can see.
Yeah.
Yeah.
And.
Okay.
Good afternoon everybody.
Um, we're going to continue with, uh, countercyclical policy and
really turn to fiscal policy after discussing quite at length,
monetary policy.
Um, so let's just start with a reminder of how,
you know, to put things into context a little bit.
Now, from the national income identity, we know that in
the short term at least, when the economy is income,
is demand driven.
It's a determined by these consumption investment, government spending and
net exports.
So income in the short term.
Now what we talked about monetary policy.
And again to drive home the idea of countercyclical policy.
It is at in bad times you do expansionary policies
and in good times you or in, in in periods
where there's overheating you do contractionary policies.
So with that in that notion it's countercyclical.
Now, monetary policy can have an impact on primarily these
two first factors.
We didn't really talk about this one.
We'll talk about open economies in the last, uh, few
lectures in the last couple of weeks.

But by lowering the interest rate, you get people to consume more.
Uh, they can borrow more for, uh, to, to purchase houses or durables.
Uh, they want to save less because interest income has fallen.
And of course, one really strong impact is through investment that you you invest more because lower cost of capital.
So monetary does these things.
Um, it could also stimulate exports, potentially.
Uh, but we'll get to that.
Uh, when we talk about an open economy.
But in the closed economy, since this is how monetary policy gets to stimulate, uh, expansionary monetary policy stimulates output.
Now, when we talk about fiscal policy from the fiscal side, from the government.
Right.
Fiscal policy constitutes primarily two things.
One is government spending, as you can see here.
And a reduction in taxes or increase in taxes.
So changes in taxation.
So fiscal policy constitutes changing G or changing taxes.
So as we'll see that increasing government spending.
And this is you know things like.
Uh, you know, spending more on social infrastructure, on hospitals, on education, in wartime, government spending obviously increases to fund these things, military technologies, building infrastructure.
And we'll talk about how that can actually impact the economy.
But government spending constitutes a fiscal policy.
And then taxes will probably most likely work through consumption.
Right now we're going to talk about government budgets and, you know, taxes tax revenues and budget deficits.
But um, but by reducing, uh, by reducing taxes, can you get more economic activity.
Maybe it's through consumption.
Maybe it can also invest a imply a effect investment.
So we'll talk about these things.
But first of all to note that fiscal policy constitutes government spending and taxation.
Um.
Now.
We've seen really large fiscal policy responses.
Okay.
In times of crises.
Um, so this would, uh, consist of after 2007, it would consist of the fiscal response to Covid.
So this is.
A graph of the fiscal response.
To Covid, um, in terms of GDP.
So fiscal governments or fiscal measures as a package as a percentage of GDP.
Now just again, how do we think about this in the context?
Well, first of all, remember that Covid started and then people couldn't go out and consume.
And then these companies and the firms and the restaurants and the businesses, all, you know, met with a huge challenge when people couldn't consume and demand their services or goods.
And so they had to lay off workers and they might even have to close their businesses.
So at this point, this is precisely when you want to do countercyclical fiscal policy.
The government unleashed a massive, um, fiscal plan all around the world.

And these are really large numbers.
So Hong Kong 4% of GDP is really large.
Um, China 2%, UK 1.3%.
Um, uh, US is not here, but we'll see us.
Uh, responded with a $5 trillion, uh, fiscal package, and
only 1 trillion was but only 1 trillion for the
Great Recession of 2007 to 2009.
So the fiscal response was five times that of the
fiscal response after the financial crisis.
Gee, does that really make sense?
The official recession, as we saw with Covid in the
US, lasted for a few months.
Right.
Um, in the US in the Great Recession that lasted
for two years, and the consequential impact afterwards.
So 5 trillion.
So how do they get to determine this number?
But first to note that these are this is a
very, you know, strong reaction of the government.
Again this is where policy plays a role.
Right.
Why such a reaction.
Well again to kind of mitigate the economic fluctuations potentially
backstop the multiplier effect right.
From further cuts, further labour demand moves to the left.
You needed a massive fiscal response.
And this is different from monetary policy.
As we'll see, monetary policy is potentially, you know, more
indirect in the sense it's just cutting interest rate here.
It's just a direct spending.
You know, you build a bridge that means you've got
to hire more people.
These people will start to consume more.
You go and build buildings or boost the property sector.
That obviously has the positive multiplier effect as we again
revise.
But the idea is, can you have this massive stimulus
to prevent the economy from further declining and potentially to
resuscitate it?
But what is also true is that when you have
large government spending, you have huge deficits.
Okay.
So first of all, we'll talk more about that typically.
But this is UK right.
This is the debt to GDP ratio.
But this is between 900 and.
Looking at this.
Now, these big, um, or these black lines are the
major recessions.
Uh, uh, and uh, that's, you know, uh, these are
the major recessions and, of course, the fiscal response to
these recessions.
But guess what happens?
The debt ratios climb right here.
Here is, you know, debt ratio is going down suddenly
a big recession.
And guess what?
The decorations climb a lot and then it comes down
again.
And then another recession or in this case, a Great
Depression.
Um, then a massive, uh, an increase in deficit, of
course, by the, uh, by, um, during the Second World
War, uh, deficits rose.
And again, after 2007, we've seen a rise in budget
deficits or, sorry, debt to GDP ratio result.

This is total debt to GDP ratio.
We'll talk about more of what our government debt.
This is the national debt.
You can see that basically the pattern here is after
every recession debt levels right.
I'm going to talk about why fiscal policy is very
useful.
But it could also lead things to like rising debt
debt.
Right.
Um, and uh, that can also pose some financial, uh,
problems.
For the economy.
But often we think this is really necessary to save
an economy from spiralling further.
Um.
Down.
Okay, so that's the UK saw fiscal responses around the
world.
Obviously we talk a lot about the US because again
you know, US is really.
In the centre of the financial world here.
And its impact on the world is.
Very, um very, very.
Clear.
Now in the US.
Countercyclical.
Fiscal policies passed by the legislative.
Branch.
Congress and signed by the executive.
Branch, the president.
So, uh, these uh, parties work together to pass big,
uh, budgets or government, uh, fiscal stimulus packages, uh, for
the economy.
Um, and that was represented.
By a Tarp Tarp after the Great Recession.
And, um, uh, these, uh, also.
The stimulus package.
Uh, post, uh, the pandemic.
Now, expansionary fiscal policy is what we talked about.
Uh, government spending and taxes.
So expansionary policy consists of increasing government spending.
Also reducing taxes.
Right.
Reducing taxes is expansionary, particularly on, uh, which mechanisms we're
going to be more specific but.
Counter, uh, contractionary uh, fiscal policy is to lower government
expenditure and to raise taxes in order to reduce the
growth rate of the.
Real GDP of real GDP, uh, as opposed to expansionary.
So one is increasing government.
Spending and lowering.
Taxes.
The other is the converse.
Now there's a concept called automatic stabilisers.
Countercyclical stabilisers.
Uh, okay.
Suppose again, every time there's a recession, we need to
do expansionary policies for a monetary fiscal or discuss about
when we tend to deploy employ one or another.
But in fiscal policy, there's an automatic component, right?
Unlike monetary policy, you have to set interest rates or
change interest rates actively as set by the central bank.
But here the reason it's automatic or some components are
automatic is I think about recessions.
Governments at this point will have to increase things like

Social Security payments.
So the transfer payments may be food stamps.
Um, it may be, uh, you know, other kinds of
relief packages.
Uh, and they also collect less tax revenue because, uh,
people are, uh, businesses, you know, a real economy has
slowed down.
So the tax collected is automatically lower.
So there's a countercyclical component here that's very automatic, that's
generated just by natural responses of government spending, contractual taxes,
um, uh, or government spending increase in sorry or taxes,
uh, falling uh on the, an absolute levels.
Um, and um, uh, in, in really good times the
opposite is true.
Ah, you collect more taxes.
So that's counter.
That's counter.
Uh, um.
Countercyclical, uh.
Contractionary fiscal policy.
And you do much less of that.
Uh, and one thing, one important thing is the unemployment
benefit.
One, uh, was, uh, when I contacted, well, um, the
community more insurance or more benefited offered.
Okay.
So some of these examples, as we mentioned.
Was, um, a.
787.
Billion American Recovery.
And Reinvestment.
Act of 2009 that was to deal.
With, um, the financial.
Crisis.
Um, and then, uh, by 2020, they.
Passed a 2.2 trillion coronavirus Aid, relief.
And Economic Security Act, or Paris Act, CARES act.
Um, and that was one component of the fiscal policy.
The entire fiscal package, again, was $1 trillion in the
first scenario and 5 trillion, uh, in the second scenario.
Now, coming back to what we have learned in the
previous lectures, we know why some of this, especially, you
know, this massive fiscal stimulus.
On top of the monetary stimulus, on top of the
things, uh, could have led to the current inflation, right?
Could like, uh, because when we shift the labour demand
curve too much to the right in the sense that
you're already, uh, close to maximum employment, then by stimulating
the economy more, you're not getting more employment benefit to
GDP.
You're getting more inflation.
This is why it's very, very important to kind of
gauge how big the package should be.
If it's too small, what's the problem?
They're too small.
The problem is that oh, well, you know, people are
not going to be very confident and about your commitment
to the economy.
So they might think, well, it's too small.
So I'm not going to spend because I don't know
when the economy is really going to recover.
If you are too small, then.
Hire a firm, hire a few more workers, but not
a lot more.
And that doesn't get you into that kind of cycle
of recovery.

But then, of course, if it's too big, then we
might end up a scenario where our labour demand curve
shifts to the where the Phillips Phillips curve or the
trade off between unemployment and inflation, um, is very high
and you don't get much a real economy benefits, but
a lot of inflation results and that is potentially one
of one side of the debate, is really the stimulus
package that has led us to such high inflation.
Okay.
That's one side of the debate.
Another side debate is it's really about supply chains and
production and supply and, you know, increases in cost.
Uh, probably both of these.
Also play a role, but these are really, really big,
um, big numbers.
So, uh.
Now we're going to talk more specifically about the government
side by government spending when we talk about things like
debt.
Right.
Certainly when we look at U.S. debt, you're going to
read a lot in the news about how the US
fiscal deficit is.
You up to that level are too high.
This is, uh, us on a trajectory where the dollar
is going to collapse.
Plus, the dollar is not going to be as prominent
as it used to be because of the fiscal unsustainability.
Now, what do we mean by fiscal and unsustainability?
First of all, um, if we look at the fiscal
side or the government, government side, uh, government has just
like household income and spending.
Right.
Uh, household earned income.
And consumption is part.
Of the spending.
What does government have?
The counterpart to government is the government.
Income, if you will, is the tax revenue it collects.
Right.
And the expenditure is how much is expended.
So when we talk about the big gee in the
national income accounting, government expenditure, that gee is this number.
So how much does the government spend.
Now the difference between that is the government budget deficit.
And, uh, if, um.
Well, what we can see here is, first of all,
expenditures are greater than the revenues.
Uh, expenditure is greater than revenue after 2007.
Does that mean a deficit or surplus?
Right?
Well, it means a deficit because the government is earning
less than spending.
Right.
If it's revenue is above expenditure and you have a
government budget surplus.
What does that mean then?
The government is borrowing.
This is just like a household income is less than
their income.
Probably borrowed.
So the government deficit, first of all, we see, uh,
has been rising over time in the US.
It had it really went up um, during, uh, and
during the Great Recession and why?
Well, because first of all, the revenues have gone down

and the spending has gone up, especially after first quarter
of 2009.
Right.
So again, when revenues falls and his spending goes up,
your deficit climbs up.
Okay.
Um, it's not so obvious.
Uh, or actually, we don't really have the.
This is just to show you what happened during a
recession.
Um, but we've seen also rising government deficits, uh, in,
in the recent, uh, pandemic.
But here you can see that this is the recession
times, and this is during countercyclical policy, right?
This is countercyclical fiscal policy because government deficits are rising.
Uh, and, you know, government is spending more.
So when we talk about fiscal sustainability, just, uh, to,
to uh, to finish the argument.
Is that when debt.
Levels are rising, are continuously rising with revenue, uh, with
the government currently in deficit, uh, and especially because of
the recessions and the massive fiscal responses.
Um, then then you think.
At some point.
Well, you know.
Uh, is the government able to repay at some point
they have to apply.
You can't you can't borrow forever.
Well, maybe the US can borrow forever because of special
circumstances.
But normally in a developed country, at some point you
have to pay.
And do you have enough resources, enough exports, um, and
net exports and other things to repay that debt.
Uh, when that it becomes, uh, is called into question.
Then investors are much.
Less likely to lend to you as a country or
lend to you as a government.
Right?
US government deficit is funded by, you know, um, a
lot of people buying government bonds, right.
So how does that how does that actually work?
Well, the US government will say, well, okay, we're going
to sell it to the private sector.
Foreign investors to the investors.
You guys will buy bonds.
You give me cash.
That's how usually a government you fund this government deficit.
Now, now notice that the central bank here is not
involved, right?
But the central bank could be useful in times when,
um, during the massive, uh, fiscal, you know, you need
to borrow a lot of money.
Uh, and, uh, maybe the private sector doesn't want to.
By these bonds, then the central bank could potentially just
say, okay, we'll buy your bonds, right?
And we'll buy the government bond.
And that in a sense is called monetising the debt
on the central bank increases.
Or you use or create a lecture a lot of
time, money and you see something like that not going
for the private sector in that sense, you know, then
we can talk about inflation and all that.
So monetising the debt is like printing money in that
sense as well.
But typically governments go and issue bonds and uh, the

market purchases that.
But if your death is.
A continues to.
Rise, well, the.
Market might not want to lend any because they don't
know if you're going to be able to repay in
the future.
Right.
Taking this to the logical extreme, this is what investors
are sometimes worried about.
The US, uh, deficit.
Climbing, rising.
And the physical capacity is shrinking because of so.
Much accumulated that over the years.
Um, but it's related to what we're talking about here.
Uh, and so this now this extends to 2020.
Uh, this is the government deficit as a percentage of
GDP again from 2010 to 2020.
So it can be seen, um, it really rose, uh,
this rose to what, uh, 13, more than 13% by
22,009 and a rose to almost 19% of GDP by
2020.
A massive increase in again revenue following.
Government expenditure rises.
Let's do that.
Okay, so how does fiscal policy actually work?
There's again the concept of a multiplier.
Now how do I determine if I'm the president and
I'm working with Congress in the US.
How do I determine how much fiscal support I'm going
to give to the economy?
Right.
Is it a trillion?
Is it 5 trillion?
Is it 300 billion?
Well, so it has to factor into this, you know,
what is the multiplier effect like for every additional dollar
I send in the economy.
What is the actual impact on the economy.
So this gets to this concept of multiplier.
Now government multiplier is the concept of, um, this, uh,
this, you know, $1 change in government expenditure.
How much does it change GDP?
Now we'll talk about crowding out.
But let's just first of all turn to this example.
So think about this okay.
So this increases by one unit government spending right.
And in this first scenario output just increases by one.
How does that work?
Well, you know, again, I go and build a bridge
or I have a $100 billion infrastructure.
Right.
This year, $100 billion produces $100 billion of additional output,
um, without any multiplier effects.
Uh, that that also increases one for one, right?
Maybe, uh, I just spend it and that's that, that
that $100 billion gets paid to the people who build
the roads and, um, the construction material and stuff like
that.
Right.
And that's kind of I have nothing to do with
numbers.
So remember, GDP is about half the transaction.
So there's a fraction of $1 billion whether it's being
paid, whether.
It's materials thought, whether it's um.

The workers equipment that hired.
That the multiply here is just simply one.
For every additional dollar spent, I only get $1 back
in additional GDP.
But we might not.
We might think that it's not the case, that it
only has one.
What?
Well, I go out and I spend $100 billion on
this infrastructure project.
But I employed you guys as workers.
What do you guys do?
You guys have a ton, and you guys don't spend.
All right, so that turns into the assumption.
I purchased equipment from firms and these firms capital profits
and they, you know, they see what was going on.
So they going to hire more labour, more labour.
These people also go out and spend more.
Right.
I might actually as a firm I could also go
out and invest more.
But the people who have hired more will have more
income or.
And so if they spend I think all assumptions.
Right.
Um, one additional dollar for every dollar that I have,
you know, put in this project, then a GDP becomes
a $2 for after the government spending or for.
Okay.
So then the multiplier here is two because for every
dollar additional dollar spent I get to accelerate back again.
It's the same thing about when you're looking at, uh,
the uh, the uh, expansion or recession, the labour demand
curve shifts out for some of these workers.
These workers goes and buys and stuff from other companies.
These companies are doing better.
They hire more workers.
These additional workers decide to spend more, and that cycle
continues to add up to more consumption.
Now these are just imaginary numbers, right?
To the extent of overstretch.
And they're they're hard to tell what that multiplier is
actually, actually is.
And that's why it's incredibly difficult to talk about to
say this.
Um, now there's a third scenario with an even higher
multiplier, because not only do you spend more.
Um, and all this went into income and all that
stuff, and they consume more, but also companies decide to
invest.
Maybe you have already come into a cycle or a
cycle where consumer spending more so than this is a
better way to expand and expanding by increasing faster.
So that gets.
To a multiplier of three.
Um.
Now.
Advocates of expenditure.
Based fiscal policy believe that the government expenditure multiplier is
roughly between.
1 and.
2, so it's higher than one, which means that well,
that's the that's their belief.
The ones who are more, who believe in this kind
of active fiscal policy said, well, if you spend only
$1, you're going to get more than, more, more, more

than what we sent if it is greater than one.
Some even believe that it's like the maybe the here's
the here's the here is a caveat.
When do you think the government spending multiplier could be
hot?
Although not a given thing.
At which point do you think the government multiplier of
spending could be very, very high, potentially higher than other
kinds.
So in other words, do you think government multipliers are
higher during recessions or their normal times?
Recession.
And the reason is, well, in normal times, things are
working pretty well with your employer and your your unemployment
rate is pretty low.
You're operating at almost maximum employment as a company and
you are utilising your capital stock.
Right.
In recessions your older and utilising your capacity.
You are not hiring a lot of people.
And here you get a boost.
Then it could have a much bigger impact because that
jump in spending increases your labour, cheap labour and you
hire more people.
It's going to make you use more capital.
Right.
So when you're already at a situation for maybe your
government spending.
Multiplier is low.
But it could be higher in.
In times where capacity utilisation is one of your concessions.
Potentially.
So this multiplier could also answer the multiplier but also
depend on the state.
Of the economy.
Now.
Imagine a different scenario where for.
Every additional dollar you spend.
Investment falls by that fell by the same amount and
you have no impact.
On what's going on there.
Now, this is a very important concept here and something
that, um.
Really often, uh, invokes a lot of debate.
Which is that.
There was a concept of crowding out.
So how does carving out potentially work?
Well, the government decides to go out and spend on
railroads and stuff like that.
I guess what happened that crowded out the private investment
that was originally going to be the case.
Or the government spending government.
And he says, well, we're going to go and, you
know, uh, develop the real estate sector or build the
service industry or whatever it is that, um, the government
is actually doing.
Well, that could have been done by the private sector
and now is simply carried out.
Now the crowding out also has a different, um, uh,
potential, different, uh.
Impact, which.
Is um, or a different interpretation.
Which is when the government borrows more.
Right now again, utilise everything that you have learned so
far.
What do you think happens.

To the interest?
If you think about the credit markets.
What happened?
Increases.
Right.
So, um, credit.
Uh, credit demand increases.
Right.
And that drives up this downward sloping, sloping and curved upward sloping credit supply curve.
Right.
And that is interesting.
That type of thing.
What's going to happen to private investors?
All right.
So in that sense, there's.
Another sense in which this could also be crowding out, which is that it increases by.
Or it could just be displacing some of what the private sector is trying to do.
And then you get to get a scenario of zero.
Right.
So, um, again, this is another aspect of concern we talked about, number one, rising deficit.
Levels and debt, uh, debt levels under fiscal, uh, large expansionary fiscal policy.
And second is.
How big are these multipliers?
Could it have a crowding out effect that would reduce it?
Um, okay.
So.
Some would even say that this is all nonsense.
It's not that very useful because of the crowding out, and sometimes the multiplier is well below one and might be even close to.
Zero because of too much product.
Maybe interest rate goes up by lot, or because, you know, governments participate in a lot.
Of market activities.
Just drive out other, um, other firms.
Now in some.
Countries, you know, when the state is involved in state bank lending, the state participates more than the private sector.
And the private sector kind of gets a penalised interest.
So all of that could potentially make it very dubious whether these, uh, policies could be, uh, very impactful.
So what's the answer to this?
You know, there's there's been so many papers written.
About.
Estimating the government multipliers.
And they often.
Use.
Wars.
As an example.
Right now, um, one of the, uh, you can read about this in the, in the textbook, but what's the difficulty about measuring these multipliers is that there are lots of confounding effects.
All right.
Um, is it that.
Well, first of all, you want to be you want to do counter-cyclical policies, or you want to expand fiscal policy so that it can boost.
That's what you're trying to do, right?
But then it's hard to separate.

Oh, are we spending more because GDP is increasing.
Or are you thinking more that it's hard to be
contagious?
Right.
So it's the correlation versus the correlation, uh, debate.
Uh, and so I can't identify the causal impact of
fiscal policy on the real economy in a very, very
clean way.
So economists have thought, well, maybe wars are good, um,
examples.
Because it's kind.
Of somewhat an endogenous shock that has nothing to do
with the economy but some event.
Right?
Uh, conflict.
Uh, and uh, often in these times there's massive government
mobilisation and so forth and, uh, government spending increases.
And what is the impact on the economy?
Um, so, uh, uh, then.
You know, you.
Estimate the.
Multipliers to.
Be somewhat.
Higher there.
But again, it is um, it is difficult to identify.
These episodes when you can very cleanly, uh, assess the
impact of the multiplier.
But it's a very important concept now.
So let's just look at a specific example.
Um.
In 2009, there.
Was.
An $120 billion.
Of government.
Expenditures of the Economic Recovery and Reinvestment Act of 2009.
What did Obama do to pass this on?
He said, well, we're going to assume a 1.5 multiplier.
Okay.
And the reason we're going to assume that it's a
big multiplier is that the reason is that the U.S.
is in a deep recession.
So these things can really have an impact.
Um, so if, uh, you spend 120 billion, I spend
$120 billion, and, uh, 1.5 is the multiplier that gets
you $180 billion.
And in that year alone, the $80 billion really amounted
to 1.3% of GDP.
Right?
So by spending $120 billion, uh, you get an additional
$60 billion back and then, sorry, overall, uh, you get
an additional 60 billion.
So a total of 180 billion and that constitutes 1.3%
of GDP.
Is this really very big?
Well, you can also think that in the absence of
this government spending, you know, the economy might be significantly
worse than what it is.
Right?
So, um, many believe that, um, this was very useful,
very necessary.
I think the, the, the kind of the consensus is
that, um, it was potentially too small during the 2009
crisis, uh, which is the reason why it took a
very long time to recover, as some, some believe.
And this is what kind of, uh, what what, um,
instigated the Biden administration quickly to do this massive stimulus

of quadrillion so five times more, despite the fact that.
Know, you didn't really know whether Covid was as bad
for the company as as the financial crisis and that.
So there was a bit too much later on because
there was too little, uh, in the beginning.
Now here I also want to mention, um, the difference
a little bit.
Between monetary and fiscal.
Policy in the sense and the two recessions were somewhat
different.
In nature.
So the financial crises started from the financial system collapse.
And then trickled into the real economy.
Because again, when the banks are not doing well, they
don't lend.
And then, you know, it kind of affects your businesses,
consumers, all that.
And so in that sense, maybe monetary policy was very,
very important for the financial crisis, because the monetary policy
financial system is very connected, right?
To maintain the liquidity of the banks is very, very
important.
And it was kind of.
The monetary policy played a very big role.
Now turn to the Covid uh problem for 2020.
That is a shock, right?
It's neither animal spirits, neither productivity shock.
It's not the three that we mentioned.
That causes economic.
Confusion.
Right.
That stemmed from the real economy.
Did something.
Prices came from the New York.
With impact and power.
And that's an argument that.
Was in this case, fiscal policy could be very relevant
because it is direct intervention in the real economy, whereas
um, in the um.
A financial crisis.
Monetary policy was important to stabilise the banks here.
You hand out cheques to people and they go out
and spend.
And what happened in that was.
That these a lot of American households spent.
The fact that they went out and sold it.
Um, so many believe that that was very effective in
containing the crisis.
Now, think about absent a $5 trillion package altogether for
Covid, the economy, could we not really have an official
few months recession but then a bunch of potential?
It's very hard to argue the counterfactual.
It's very hard to know what would happen without it.
Um, but also there's a risk of too much, uh,
leading to inflation.
Right.
So these are some of the.
Caveats that you want to keep in mind.
But the multiplier.
That Obama used was 1.5.
Um, okay.
So the next um.
Concept is the government taxation multiplier.
So far we've been talking about the government expenditure.
Multiplier or the.
G.

Now we have what's going on with T.
So what's the mechanism here between taxes as a fiscal policy.
To think about expansionary fiscal policy where you have.
Right now.
When we cut taxes, we do.
It's possible or it's possible that you want.
To consume more.
All right, so the first thing is.
Do you have more consumption?
Um.
But the other thing is, you might actually start to want to work.
Why?
Because you're after.
Tax income is higher.
So you were you know, you originally had a 30% income tax.
Now you have a 20% income tax.
Oh well, every.
Additional.
Hour I work I get to keep more of.
It back.
So if you decide to supply more labour in the labour market, that amounts to a labour supply curve.
Shifting, right?
Right and that everything else equal, you know, real wages equal, there's more employment.
There's more employment, there's more.
Consumption measures and.
Even greater multipliers that if you just spent it in the first place, right.
So in that sense, taxation could affect consumption.
But also, um, in the second case, um, it can also affect your labour supply.
Uh, if you work more there's more employment and even more income and that affects more consumption.
So in this case, the multiplier of the tax of the government tax multiplier of one in the second case is even higher.
And that is true.
So obviously taxes don't affect only spending.
Just to be clear, government spending is what in this.
Model we talk about in the state.
Okay.
It's just determined by the government.
It's not related to any of this stuff except with impact on one.
Um, so that's the taxation multiplier.
And finally, um, there can also be um, some crowding out effect where, yes, uh, I spend more.
Um.
Uh, yes.
Um, I, um, I.
Have supplied more, uh, also more labour.
Uh, but it's also possible that you crowd out some of the private sector, uh, in the process as well, leading to.
Um.
A lower.
Multiplier, uh.
Than, uh.
Than than.
Than two.
So it could be either one or it could actually be in this case also.

Uh, zero.
Now, um, another aspect of a of a lower multiplier.
Is that, well, I have more income.
Okay.
And some of that income is going to be spent
on foreign goods, not my domestic so on imports.
But if I'm richer, uh, I work more, but I'm
the by phone.
So rather than domestic goods in that case, um, your
imports rise by an additional unit, um, or by additional
dollar.
And so that affect on domestic GDP, you subtract that
and then as you use this stuff is made abroad,
uh, rather than in domestic borders.
And that doesn't contribute to your domestic duty.
So when you bought foreign goods, it actually leaked, leaked
out some additional spending released across borders.
So some of the fiscal policy considerations, especially for small
open economies, which we'll talk about small colonies, they're mostly
an exporter.
Importer.
Is that.
Yes.
The government goes out and spend.
You guys have more income.
But a lot of it goes to the foreigner.
Right?
That multiplier part of that multiplier goes to the.
Former because you're.
Buying imports.
So that's another sense in which.
This can reduce.
Or this is another sense of crowding out or reducing,
um, uh, that multiplier now, this time crowding out through
the rising imports rather than crowding.
Out, uh.
Private investment.
Um, so, um, what is the right scenario here?
Now, the right scenario is that when people believe that
the government taxation multiplier is actually even lower than the
government spending a lot of time.
Now, here is a really important concept.
The reason.
That.
Multipliers are believed to be even lower for government tax.
Uh, taxes are two things.
The first is how much more can you.
Okay to cut taxes, but really, I mean, if I
go out and buy something.
First of all, meals, buy a new refrigerator.
But at some point, with diminishing returns to consuming more.
All right.
So it doesn't work that that well, that's fine.
But a more equally important concept is what what is
called recording equivalence.
Now this is a very important concept.
Um, and um deserves a little bit more, uh, explanation.
It is all about anticipation, about expectations of the future.
So you see a tax cut.
Okay.
So the Conservative Party is going.
To say they're going.
To cut taxes or Donald Trump comes in and he's
going to promise.
Well have your taxes fallen or you just, you know,
go and immediately send that additional disposable income to your

higher income tax office.
I know what Ricardian equivalence says.
No.
Why?
Because rational consumers will expect at some point the government will raise.
The government is going to have to raise taxes.
A third point, because, as you said, government can borrow forever.
Right.
So eventually their spending have to equal their revenues at some point or in present value.
So they run large sections of state that have been assembled.
So if you expect that my taxes are going to go up at some point, maybe in his second term, maybe in the next president, in the next cycle, then I'm going to save that extra time.
Right.
Do you want to say that you have to expect that it will be raised at some point and and guess what happens?
But in this case, the multiplier.
It's very low pressure, very low.
Now there's also, um, you know, if you take this in a much longer scale or time horizon, generations.
Think about it.
The parents say, okay, we're in boom time, we're having a tax cut.
But guess what?
Our children will have to pay for.
This is something you often hear about.
And that's the same idea that, you know, maybe if my children have to pay for my debt, then maybe I should save more for that.
Again, that's an intergenerational altruism.
So you have to accept cultures more than others.
But this idea that you anticipate something in the future which offsets this original intention is a very important and powerful concept.
And we do see a bit of Ricardian equivalence in.
The sense that, you know, yes, I think people do go.
Out and spend money or as we observe when they have tax cuts, but they don't spend.
All of the amount of the tax.
Cuts.
Right.
Um, they, they also save.
A part of that.
So both of these reasons imply that the multiplier.
May not be as expected.
Um, because people don't just go out and spend that actual extra time.
Um, so, uh, coming back to the example of 2009, uh, what was the impact of $65 billion in tax cuts?
Uh, so apart from the $180 billion, $120 billion of, uh, extra spending over the $65 billion tax.
Um.
They assumed a multiplier of initially assumed a multiplier of one.
And that meant that, you know, you have tax cuts of $65 billion, then you get $65 billion in return, uh, in the economy.
Um, and that account accounted for only 0.5% of GDP.

Right.
So what was that, 1.4% plus?
Um.
Uh, 0.5?
Uh, basically 2% of GDP, uh, total in fiscal policy.
And of course, there was monetary.
Policy, but overall, the package was not huge in comparison
to what had happened during, uh, during Covid.
Um, then the third kind of, uh.
Countercyclical.
Fiscal policy is directly targeted.
At, uh, labour market.
So, remember I said, um, government spending, taxes and some
of it also the third aspect is related to the
labour market.
So the first obvious one is unemployment insurance.
Right.
So again, there's always two sides of the coin.
And you're you're kind of your challenge or your responsibility
also to grapple with some very, you know, not black
and white, uh, profit too.
So the benefit of unemployment insurance, especially during recessions, is
that it's a psychological reprieve for a lot of these
people, right.
Also, you might think that this might actually help support
some of the consumption and unemployment insurance.
So that prevents the consumption from going down further with
this kind of unemployment insurance.
But add that in a sauce multiplier effect.
Negative multiplier effects from working harder, but at the same
time.
The flip side is that the more generous unemployment insurance,
the more generous unemployment benefits will discourage certain people from
going out and finding jobs or.
Right.
Um, so in that sense, if that's the case, then,
you know, you have fewer people in actively looking for
jobs.
The labour supply curve shift to the left.
And guess what happens?
Employment falls even further and you are in a deeper
recession.
Maybe not a deep recession because, you know, some of
this consumption support has helped, but it hasn't helped you
boost the economy out of a recession.
Now, the second part of the labour market intervention is
the wage subsidy.
This is also pretty important because again, people think that
losing a job, even if you're compensated for losing jobs,
is a very, um, a very hard thing, right?
People get desperate, people get anxious, people get very sad,
very depressed.
So instead of hiring them, why don't we just subsidise
the companies to keep them around?
And so wage subsidies means that, well, you're getting paid
$10 as a worker.
But my firm, the firm only has to pay out
nine for the additional dollar or a pound is is
provided by the government.
What happens here is that you're effectively shifting labour demand
for to the right.
Because for every given wage rate, the government subsidies means
I can hire more people.
So that's another way of a proactive approach.
Not like stationary.
Uh, fiscal policy.

Um, the last thing I want to mention is.
Now, the.
Other side of the coin also consists of potential major
waste.
Um, one aspect of fiscal policy that is very different
from monetary.
Policy is precisely the lag through which things happen.
Now, monetary policy, you lower interest rate.
Guess what?
Things happen.
Kind of, you know, uh, borrowing tends to change as
the price has already changed.
But fiscal policy could also take a longer time to
go and spend this infrastructure package.
They go and hire workers.
And then it takes time before this policy actually, uh,
spills to the heart of the economy.
Now, the pork barrel spending is just kind of a
derogatory term for inefficient society, which is that there's nowhere.
Here you have a picture of a $400 million project
to build a bridge, uh, in Alaska with only 50.
Okay.
Um, it was proposed as part of the government policy,
but then it was cancelled.
That definitely didn't make much sense.
So government spending has the other aspect of potentially larger
waste or inefficiency.
Okay.
So this we already talked.
About about the estimating the.
Multiplier.
And we also talked about.
Tarp which is the recession fund, um, adding up to
$1 trillion.
And finally, as a conclusion again, let me just, uh,
summarise that fiscal loops fiscal policy is very important, but
it does raise government indebtedness.
There are long policy lags, especially compared to monetary policy.
There could be potential waste.
And also the crowding out effect can also limit the
impact of or the size of the multipliers.
All right.
So onwards and upwards.
We move to the open economy next week okay.
See you guys.
It's.
I know it's not a stereotype.
It's all.
Of.
Austerity?
Very much so.
The native.
Um.
I'm sorry.
Well.
Should we rather focus on?
That was.
And now I'm sure there's a lot of talks about
bringing up.
And I think.
But I didn't get the part about this.
I, um.
I, I read them.
You have.
Uhhuh.
Right.

Right.
How?
Foreign financial markets will put pressure.
Don't think that they should.
In fact, by contracting this sort of thing, we're trying to solve it.
I don't.
Know, I think for.
For the less, more.
Lax.
You're responsible for things.
That these are really important and signal.
Right.
And then you get the credit markets.
Uh, but for normal economy, it's maybe not as urgent.