

Week 8 Transcript

This.

Yeah.

Okay.

Good morning.

Good.

Good afternoon.

Good afternoon everyone.

Uh.

Welcome back.

So, uh, today we're probably going to talk about what will be the most important sections of this course in macroeconomics.

If there's anything that you're going to be discussing about in media, major media outlets or with your fellow dinner mates, um, about the state of the economy, it's going to be about these next few lectures and what I hope that you will take away from this course, um, after you finish your exams and put away your textbooks, is a certain kind of logical reasoning to understand what causes economic fluctuations in the short run.

Okay.

And this is very different from the long run growth concepts that we looked at in the first few lectures.

Can we quiet down?

Thank you.

The long run growth prospects is the growth theories that you have learned.

But very few, very, very, very infrequently.

Would you be discussing about a country's long run prospects, you know, in the newspapers or whatever it is about, you know, next 20 years, what is your potential growth and growth rate and per capita income?

What you tend to talk about is booms and busts and crises that happen over and over and again.

And what's causing, um, uh, what is the impact on the economy right now?

So in the next few lectures, the next couple of lectures, but by extension, what governments can do when we talk about policy is to look at economic fluctuations.

There are lots of names for this, including business cycles, okay, booms and busts.

But the main difference is that these are all about the economies in the short run, not the very long run.

And all the things that we have learned until now, after the growth series, whether it's labour markets quite a markets, money markets, right.

The three things we have focussed on so far are all of the most essential elements, building towards a theory of business cycle fluctuations that will help us understand how the economy works, why there are crisis booms and busts, and what we can do to get countries out of crises or, um, cool down an economy that's overheating with very high inflation.

Uh, and uh, and how to, you know, manage policy to maintain stability.

All of these are building blocks of what we're going to, uh, study now.

So what is the big picture?

Well, since the late 1920s, the US itself has experienced 14 recessions.

Hey, recessions are typically associated with many painful consequences, including loss of employment, income, consumption, and so forth.

And so why do they happen and what can we do about them?

Right.

This obviously focuses on the US, but this is true for every other economy, right?

Booms and busts and different kind of crises that sweep across the globe.

And sometimes crises that emanate from one core country like the US can spread all over to the rest of the world.

These international spill-overs something we're going to talk about later on the last part of our course.

But right now, let's take the US as an example to understand what drives these booms and busts.

Now, very recent examples to 2020 coronavirus.

Now we all remember what happened.

So let's just go through the things and put it in an economic context, which is, first of all, the pandemic led consumers to reduce their demand for goods and services right?

Given that they couldn't spend money because they couldn't interact, we can go out.

And that was a big demand shock, a demand shock versus supply shock.

These are two very different things demand versus supply.

And the pandemic led firms to cut back their activities because if nobody was spending or going out to pubs and restaurants, then these firms also had to cut down on hiring labour, sometimes closing down entirely.

They also reduced their demand for other products like equipment and, um, and other capital stock.

And of course, that led to a spiralling effect where lots of firms were affected and that produced high unemployment rates.

And with the loss of income and jobs.

And these people start to spend less, which makes good firms cut down spending even more.

Right.

So this kind of multiplier effect or cyclical effect is something we're going to study today.

Uh, and there are different theories about why that might come about.

But these are often very painful experiences.

And to try to prevent the recessions from happening for sale is difficult.

But also when it happens, governments can do something, and that's what we're going to tackle in the next week or so.

Now, of course, the UK economy suffered a great deal as well as did pretty much every country in the world.

Uh, UK GDP shrank by 9.9%, uh, in 2020, and this fall in annual GDP is a record, um, number in the last 300 years or so.

See that big drop?

Now, what was a little bit different about the coronavirus crisis or the Covid 19 crisis?

Uh, Covid 19 led crisis in the US.

Was that as we'll see, it officially lasted only for a few months.

Not a very, very long time.

That is not true for many, many other recessions, as we will, uh, see.

Okay, so what are the the key ideas we want to take away from at least today's lecture?

First of all, economic fluctuations, again, the emphasis on short

run, what we often call business cycle booms and bust.

Okay.

Have a few pretty prominent features.

First of all, there's a lot of co movement in aggregate variables.

When we're studying macro we're studying macro variables things like consumption investment.

Eventually we can also discuss about stock prices housing prices and so on so on and so forth.

But there's a lot of movement.

Things tend to go down together or go up together.

Uh, limited predictability and persistence.

And the second thing is that these fluctuations or business cycles can be caused by different things.

Now there's a huge debate on what actually drives these booms and busts.

Is it Keynes?

Is it Milton Friedman?

Is it the Chicago school?

We're going to talk about that.

The causes of these booms and busts come from different shocks.

And when you start to think about the observations or when you start to analyse the observations you have about the economy, you can start thinking about what is causing this and what the shocks are.

What kind of shocks are causing this might lead you to sometimes different conclusions about what we should do.

And a third really, really important, um, a thing that you'll, you'll learn and building off of our a lectures on an unemployment is that rigidities, whether it's in prices or wages, can amplify the extent of these recessions.

Okay.

We're going to see why.

So there are lots of things that will start to multiply and amplify and hence potentially give us these large, uh, these large recessions or even depressions.

And this is exactly what we're going to learn.

And so just by, by way of contrasting what we've learned in, in the first course, and I'm trying, I'm going to try to string together everything we have learned so far.

So I hope hopefully it's clear, you know, it's a very different from the growth theories right.

Growth theories is first about about real income in the very long run.

And real income then is shaped by things like fundamental factors like capital, labour and technology.

Right.

This is going to depend this is going to determine the long run supply of a of a country's goods.

So supply or income.

Um, but if it was always driven by capital or labour or productivity, and we probably don't see these kind of fluctuations that we see so regularly, these recessions and booms and busts.

So it has to be something else.

So if that real income is taken to be kind of the long run per capita or long run potential, what we're seeing in the short term can be caused by a variety of things.

And that's the stuff that we usually talk about in media.

And that could be very different from these long run factors.

And as I mentioned, whether it's unemployment or the credit

market or the banking system or monetary policy we've studied, these are all building blocks for understanding fully how the economy works in the short run and these business cycles.

Okay, so that's how we want to think about, um, connecting interconnecting these, uh, these topics.

Now, uh, I did show you a graph, um, a figure similar to the current one, uh, which is, uh, real GDP.

Okay.

This takes the take.

Let's take the US again.

Let's because it has the longest historical series, um, 1929 to the most recent year or until 2020.

And, um, first of all, we just to remind us

this is real, uh, y is a real GDP because

we're taking constant dollars right of a base year.

So 2020, 2012, constant dollars, which indicates it's real GDP.

And we started from 1929, which was just a little bit above a thousand, a thousand 1100.

And then real GDP grew um, uh, until 16.

I can't really see here.

Yeah.

So above 16 trillion in real terms right before 2020.

So um, 16 times over, over this period.

Now a few observations.

One is, uh, it's been a positive trend.

Right.

And we remember we talked about the log scale, okay.

Making it slightly more linear so that each proportionally, uh, each increase is the same.

Well, first of all, we see that there's obviously a positive growth rate in the US.

Okay.

And this as we again connect to the first lectures that we have studied, this is sustained growth right.

Sustained growth because it's a it's a positive sustained long term growth of around 2%.

That's neither about catch up or about, you know, uh, about something else, but sustained by driven by productivity growth.

Um, and what we also see is that there are fluctuations around the trend.

So it's not like we just grew linearly and predictably by 2% every year.

There were very big dips and some booms.

And uh, and as we see in the next figure, um, here, when we trend it, we can see these cycles.

Right.

So this is just taking the trend away, okay.

These fluctuations.

So, so first of all, when we look at this real this trend we're talking about long run real growth rate.

Right.

That's lecture one through four okay.

Understanding this linear kind of growth trend sorry positive growth trend.

What we're doing right now is we're going to try to study the fluctuations around the trend.

And to see this a little bit more clearly I'm going to show you this trend in GDP real GDP series for the US.

But we take away that trend and just look at the cycles around the trends.

And these are business cycles okay.

These booms and busts are business cycle.

We would think about these as short run economic fluctuations okay.

So let's just look at this graph and stare this at for for a second.

And it's a cyclical factor because we're looking at the percent deviation between the actual GDP and the trend line which is the red line okay.

So we are trending this um this is something we discussed earlier on.

It's also um, more in the if you want to look at the details in the, in the textbook.

So we see booms and busts and most notably the first big cycle is the Great Depression from 1929. This massive drop.

What is this, almost a 30% drop, uh, a reduction in GDP, uh, real GDP, uh, from the trend, uh, that lasts until 1940 and then a recovery or a boom.

And then, of course, the World War one.

Sorry, World War I, sorry.

World War two, 1941.

This big drop, uh, until nine, uh, 1949.

Uh, sorry, 1940, uh, 1941 to 1945.

Um, is what we see.

Here in the second big drop.

And then there were some, you know, booms and busts and we can see the oil crises here, you know, oil prices, inflation.

Remember that inflation went up by a lot.

And then in the, in the in this Paul Volcker period where we have we hiked up a real interest rates.

Sorry, sorry.

We hiked up interest rate nominal interest rates.

And that kind of led to a deep recession for the reasons that we discussed last time.

When interest rates go up, then economic activity falls.

And then, you know, some of these dotcom bubble boot bursting in early 2001, and, of course, a really big drop in the Great Recession, the financial crisis and then a drop in 2019, 2019.

So you can see that there there are, uh, fluctuations around the trend.

So not a smooth line or a smooth sail by any, uh, by any means.

And so how do we define a recession?

So National Bureau of Economic Research and Bir in the US would come up with official, uh, kind of official, um, announcement of when an economy, the US economy is officially in a recession.

Right?

So recession is consecutive periods of negative growth, uh, in real GDP.

Uh, that is a recession and economic expansion.

Is everything else, right?

Because normally we see we see growth.

Right.

So expansions otherwise.

But, uh, recessions when you have, um, a consecutive negative growth.

Um, so if you look at the US, a recession has occurred about once every six years, which is pretty frequent, uh, in that sense.

Right.

So, uh, are we due for a recession now?

Actually, the UK has a slightly different issue with Brexit

and, and, and and other things.

But, you know, us is kind of due for another recession.

If we look at these historical frequency being the last one being, uh, after 2009, reasons why it avoided the last recession is something that is that is heatedly debated, uh, currently, but we don't really know the answer.

Another thing is that these recessions are really hard to predict.

I remember that, um, the Queen once asked some economists why they she was just absolutely shocked that economists couldn't have predicted the 2009 crisis or 2007 2009 crisis, or the euro crisis, for that matter.

And that was something that was very, um, uh, very, very difficult to understand.

But the truth is, even the most brilliant economist, Milton Friedman, did not see, uh, um, uh, or Keynes for that matter, did not see some of these big recessions coming because they're hard to predict.

And the reason is we're going to see that there are different kind of shocks that can lead to these recessions, sometimes even not explained by fundamentals, sometimes about by animal spirits or a bout of pessimism or changes in sentiments or even small shocks can become big shocks.

That's what we're going to try to understand in this lecture.

Uh, but just just to conclude from here that recessions happen frequently, not only in the US, but really virtually everywhere else.

And, um, uh, and, uh, and we'll see about, uh, what we can do about it.

Okay.

So these are so just looking at this is a summary of the recessions that have happened between 1929 and 2020.

We've seen that there are many.

And so the biggest, uh, decline in real GDP from peak to trough was about 26.3% during the Great Depression and then during the First World War, one, 12.7%.

And, um, uh, and then, uh, you know, you might think this is not really big between, uh, 2007, 2009, 4.3%.

Uh, but this is real GDP.

Okay.

Uh, if we look at nominal GDP, that could be a somewhat different.

But these are still pretty a pretty big numbers in retrospect.

Um, uh, of, in terms of decline, because otherwise the US GDP would actually be growing at 2%.

Okay.

Okay.

So the first observation is that their co movement okay. The co movement when we talk about something called the processor quality.

Now when we talk about macro again we're talking about our understanding of aggregate variables.

Right.

What are the things that we're interested.

We said this in the very beginning.

Consumption, investment, government spending.

And if you're an open economy, net exports.

Right.

These are these are aggregate variables that we've discussed at length okay.

And we see the first thing we see is that

a lot of these things, when we say something's procedural that means that it moves together with GDP okay.

So when we see booms we're not just seeing GDP go up.

We're seeing consumption go up, we're seeing investment going up.

We're seeing employment going up.

Right.

Same thing with a recessions or busts GDP goes down.

But so does consumption.

Investment and net exports often do as well.

Right.

Government spending is a different thing.

That's policy that's determined by policy.

So when we say something moves along with GDP this variable is political.

Now if it moves in the opposite direction with with GDP it's countercyclical.

So for instance when we talk about countercyclical policy, it means that let's say GDP falls or we have a recession, but government spending goes up.

That's fiscal policy.

To try to counteract this recession, then government spending is obviously countercyclical to GDP because government spending rises when GDP falls.

Right.

So process is a main feature of the business cycles.

And we can see this in um, the figure here where we try to graph the percentage change in consumption growth on the x axis against the real investment growth on the y axis.

And we see first of all, there's a positive relationship.

Right.

So these are just the different years between 1929 to 2020.

Each dot represents a year.

And basically we're just looking at you know for you know, if we have uh 1934, this is a positive consumption growth.

And it's matched by also a positive investment growth.

But whereas we see 1932, we have a big drop both in consumption on the x axis and investment on the y axis.

So this is roughly this is a positive slope relationship.

And they fall around this line which means that these two things are moving together.

Right.

So we we have all this historical data to show that these things, two things, uh, go together.

Why is that important?

Well, this is going to help us build this theory about these booms and busts, right?

If investment falls and consumption also falls, then remember our, um.

Remember our, uh, our our our equation.

Uh, let's just remind everybody, even though I'm sure you don't need to be reminded.

Uh, y equals c plus I plus g .

Okay.

This will be useful to keep in mind.

Um, and you can say plus net exports if you want, but this is not going to be our focus point.

Uh, we see that this is just a reminder.

This is our income.

And based on the expenditure, uh, a notion of income.

Right.

So if spending falls, C falls, then GDP obviously falls.

If it falls, GDP obviously falls even more.

So the fact that these things are comoving falling together must mean that this is going down even further than if just C or I falls.

Right.

So this and we're going to we're going to understand we're going to build a theory as to why these things move together, especially CNI, uh, to understand how these things multiply.

Okay.

So that is just a reminder about the demand side and why that's related to some of these, uh, these elements here.

Okay.

So as we mentioned, um.

No predictable patterns, very hard to forecast, and it's also hard to forecast when a recession will end.

Now remember during the the kind of the height of the coronavirus, especially in March, April of 2020, people were saying this is going to be worse than the Great Depression, right?

You have \$1 trillion of restaurant business that will be just completely shut down.

Nobody.

It's not just like about spending less.

Nobody can spend anything.

Um, but officially, uh, the US coronavirus less recession lasted for a few months only.

Okay, maybe it's because of really great policy.

Let's study this.

Right.

Maybe the Great Depression was that bad because government policy didn't do what it needed to do to get the recession and the economy out of the recession.

Maybe we've just become smarter and the government has become better at handling these major recessions.

Right?

These are all possibilities.

But it's hard to forecast when it comes to an end, and precisely for the reasons that we're going to discuss.

When you once you understand how they occur and how they end.

Um, the third thing is that it's persistent.

When we talk about persistence, it means it's long lasting.

Okay.

So if the economy is doing pretty well, the best guess you are going to have about next year is that it's going to continue to do well if the economy suddenly tanked.

Your best guess is that it's going to tank.

It's going to stay pretty bad in the next year.

So there's a certain degree of persistence in the sense that it's going to last for a few quarters in general, right?

Not not the exception was the coronavirus.

Although one can argue that the long term impact on the economy has not been accounted for and that that is that is a significant.

Okay.

So, um, uh, so just to give you an example, during the Great Depression, uh, we saw, uh, this is the Great Depression GDP.

What did we see about consumption?

This also fell.

Investment also fell.
So we want to look at between 1929 and, uh,
1929 and the four years later.
So GDP fell, consumption fell, um, and then investment fell.
And then all of these things also eventually recover.
It did take them a long time to take ten
years to recover from this.
So again, the impact is quite persistent.
And this thing lasted, uh, for four years, um, followed
by seven years of positive growth.
So this illustrates the persistence aspect of these booms and
bust cycles.
Um, okay.
So let's also the one thing we didn't discuss is
about unemployment, right?
When one of the key features about recessions is not
just that income falls and consumption falls and investment falls,
but unemployment rises, uh, rises quite starkly and significantly.
And that is contributing to the problem, as we will
see a very shortly.
So this is unemployment rate that went to basically a
quarter, quarter, uh, 25% unemployment rate at the peak of
the depression.
And then a slowly came down.
But as you can see, it's a very long and
painful process to drive down the unemployment rate.
And it was still pretty high and went back up
again.
So unemployment is another key feature of this.
Now, the last feature that we're going to show is
that asset prices also are comoving with GDP.
And it's often the case that things like stock prices,
housing prices are also pro cyclical value variables.
Right.
So when GDP goes down, uh, stock prices go down.
Your asset prices, which include stock prices, housing prices, bond
prices, all of that start to go down or the
financial wealth goes down.
Um, and as we as we see here, look at
what happens.
So this is around, uh, 380 before the onset of
the crisis, right?
As an index for the, uh, the Dow Jones.
And by 1930 or within a few months, it had
dropped to below 200.
So it's almost 50% drop and a further decrease to
50.
So there is some sense of, you know, a continued
decline or pessimism, if you will, in the stock market
that went down to 50.
So only about one seventh of the stock market value,
uh, before the onset of the crisis.
Uh, and so if we had some data about housing
prices, especially, you know, if we look at the housing
prices in the financial crisis, obviously that also really tanked
along with stock prices.
So lots of variables in the economy are going down
together.
And they're prosecutable in the sense that they move in
the same direction as GDP.
Okay, so now what do we make of this?
This is what we're trying to we're trying to understand
these facts.
Right.
What causes the fluctuations.
Right.

And in the following in the next we're going to look at what can save economies from these fluctuations or get them out of these recessions or get it away from these overheating situations.

Um, so there's a lot of debate about this, as we'll see.

You know, some people think it's sentiment, some people think it's monetary policy to some people think it's technology shocks, some people think it's oil prices.

We're going to try to come up with a framework to, to to understand this.

But there is roughly one consensus.

And that boils down to the fact that firms start to hire fewer people.

Okay.

And to be precise, that is amounts to a shift of labour demand.

Okay.

The labour demand curve an unexpectedly.

And we call when we say unexpected things.

We're calling them shocks right.

Stuff that you couldn't anticipate if people could anticipate the coronavirus a while ago and we could have, you know, done things differently, or we could have prepared for that, and maybe we wouldn't have had such a severe crisis, certainly for the financial crisis, if people understood that housing prices were going to fall, then they might start to take actions that will, uh, prevent them from having such a big negative impact.

So a lot of these are shocks, uh, in some ways, in the sense that they were unexpected to the vast majority of people.

Um, so the consensus is that firms suddenly start to hire fewer people, and this could be driven by many different reasons.

And so here's an example of three things.

And this is all I mentioned this because we're going to see this very very frequently okay.

So let's say there's just a suddenly a sudden demand shock right.

So we just don't want to consume that much stuff anymore.

Right.

Uh, maybe because it's because we're pessimistic, maybe because we want to save more, maybe because we don't like the stuff that these firms produce anymore.

Maybe because we think that the future doesn't look so bright or let's just say, you know, let's say we're a small country, okay, small economy, let's say South Korea.

And then we suddenly had a surge of external demand for our goods, right?

So people started to not want to consume our own goods.

Right.

That's a fall in output demand.

And in that sense, what our firm's going to do.

Well, if they're not going to buy that stuff from us, then for every given wage, we're going to hire fewer people.

Right.

And same thing with output prices.

If the stuff that we sell, that's jeans that we used to sell \$100, suddenly we can only sell them at \$50.

We're going to make fewer a profits by hiring that many people.

So we're going to cut back on the number of people.
 Right.
 So labour demand shifts left leftward.
 Same thing with the decrease in labour productivity.
 Now remember and these are again really core elements to what we've learned before.
 But also here is that people firms hire based on the marginal product of labour.
 Right.
 Your or or in other words how much you contribute to the firm revenue.
 So when marginal product of labour which is equal to wages, you hire wages, you hire people up to the point where the wages equals marginal part of labour.
 Right.
 It's also based on your knowledge in macro.
 Um, then you will hire more.
 If productivity decreases you're going to hire fewer people.
 So that is something about productivity.
 The third possibility is say import prices rise.
 Now this could be oil prices right?
 Oil prices rise.
 Firms make fewer profits.
 Or you can say when technology prices go up or capital prices go up or you know something, right.
 Inputs, then your firm profitability falls and what you can do, you're going to hire a few people, fewer people.
 Right.
 So labour demand curve shift is something of a consensus as to be the starting point of a cause of a recession.
 Right.
 But it could be driven by any of these factors or potentially many, many more.
 Let's say you have um, anyway, we'll mention some of these, um, further.
 Um, so now the point here is that if we have a flexible wage situation, I don't know how well you can see this, but just.
 I'll walk you through.
 Labour demand.
 Okay.
 pre-Recession.
 Labour supply.
 Let's just say it looks like this.
 Upward sloping.
 Okay.
 Um, I know that we drew something a little different where it became vertical, but that's that's irrelevant.
 Okay.
 You can just think about that as being the long run labour.
 But let's say this is upward sloping and downward sloping.
 Why is this downward sloping rather than a vertical.
 Is there a horizontal line.
 Well this is the case of flexible wages okay.
 That wages can.
 Can rise and fall flexibly, right, as opposed to downward wage rigidity.
 Now, all of these things that we said, the shocks that happened causes a labour demand curve to shift to the left.
 In other words, for every given wage, the pre-recession wage here, I need fewer people.
 I need this many people.

So then the Labour, the the labour demand shifts here.
And what happens is that obviously the equilibrium or market clearing wage falls from 1 to 2.

Right.

And at this point this is the number, this is the amount of employment that we see in the economy as compared to the pre-recession employment here.

Obviously employment falls, okay, employment falls.

And then eventually we see on the second graph that when employment falls, real GDP starts to fall.

So this is a graph of real GDP against the x axis of employment.

We looked at the solo model is against the x axis of capital.

But obviously we know that growth or income depends on employment and capital.

So we see just to remind us of the aggregate production function from the first few lectures.

It's upward sloping but it has diminishing marginal returns.

Right.

So that's why its slope starts to become less and less steep.

Right.

So.

Here.

How does it translate to real to follow?

GDP well employment was at this point here right.

And now employment fell to here.

So what's the corresponding income.

Well it's this this orange line right.

So compared to this point um, of real GDP, sorry, compared to this point of real GDP, we have a lower real GDP.

And if we had a more serious recession, we'd fall further down the curve.

And we have even a larger drop in real GDP.

Right.

So the relationship between this one, this one is that after the recession, with the onset of the recession, because of the labour demand curve shifting, we see a fall in wages and employment, right.

And employment lower L or lower number of people working leads to a fall in real GDP.

Okay.

But this is going to be much worse if we don't have flexible wages but downward wage rigidity.

Okay, so the whole thing, there were many years that economists tried to study why the impact of the recessions were so long and so painful after 2009.

And some prominent economists thought it had a lot to do with downward rigid wages, because then output would fall even more.

And let's see why.

So so before we see that, note that what's cushioning the situation is that wages can fall.

Right when you have a recession.

I don't want that many people.

Yes, the equilibrium wages starts to fall, but if the wages can't fall, then I'm going to hire even fewer people.

Right.

So this leads then to a deeper recession.

Okay.

So now we have a downward sloping sorry, downward wage rigidity.

Just this is the way that, you know, we're obviously

following the textbook to make this easier.
 The way we're drawing this way is just to make things really stark okay.
 So this is the labour supply in the long run.
 You want to think about this as the maximum amount of employment possible.
 So it's a vertical line.
 And the horizontal line is to just make this taking it to the logical extreme of perfectly flat wages.
 When we go downward, you cannot you remember because of either contracts that you've signed or the psychological impact, people don't like to see their nominal wages fall.
 This is again nominal wages because that's what's what's being paid.
 Right.
 That's not real wages.
 But look at the situation when we have downward wage rigidity now pre-recession demand, if we had a downward or an upward sloping supply curve right then we would have an output fall to this level or labour fall to this level.
 But because wages can't fall, then we're going to even hire fewer people.
 Okay.
 So again the logic is if you could just cut wages, then yes, there will be.
 I'm going to have to fire a bunch of people.
 Okay.
 But imagine the case when you can't change wages at all.
 I'm going to still have to keep think about the coronavirus where your restaurant is completely closed, right?
 If you can say, okay, I'm just going to pay them very little, okay.
 And then maybe we'll just, you know, still keep them around.
 But if we can't even change wages, then I might as well just let everybody go or let a lot of people go.
 Right.
 So it causes a deeper recession because wages can't adjust.
 Remember that in these markets and the economics, especially in economics, you always have prices and quantities and prices make the markets clear.
 And prices prices make things flexible.
 Well the problem breaks down or that that mechanism breaks down when you have these kind of rigidities like minimum wage or downward wage, Richard.
 So you can see that you can have a very steep recession.
 If wages can't fall, this labour demand curve might fall at this point if wages can fall but it reaches a further, it goes on the further further to the left because of rigidity.
 Okay.
 So that's a very, very important aspect of downward wage rigidity that I want to emphasise here.
 Okay.
 So what are the three different schools of economic fluctuations.
 What's causing these business cycles okay.
 There's been a huge amount of debate regarding this.
 Right.
 And and you can be, you know, kind of put in different schools depending on which of these you believe to be the most dominant drivers of these booms and busts.

So the first is a real business cycle theory.

Real.

Okay.

Not nominal, but real.

Real shocks.

What are real shocks referring to?

Well, in this case it's referring to things like technology shocks, productivity shocks okay.

As opposed to nominal shocks emphasised by the monetary theory where it's a lot about what central bank is doing, what is happening to money supply, what's happening to prices as a driver for these fluctuations.

Keynesian theory is none that goes beyond a little bit about beyond conventional economics, and thinks about animal spirits or changes in sentiment or confidence.

Things are not explained by economic fundamentals.

Right.

So people have a huge debate on what's the main driving force of these business cycles.

And probably all of these things exist, except that different episodes are caused by different things.

And this ties back into some of the unpredictability of these, uh, recessions, booms and recessions.

So let's just focus on real business cycle theories and look at also what the issues are.

Now.

There are two economists, Cleveland and Prescott, who actually got a Nobel Prize for this.

This has been very, very popular.

Some people call this the Chicago School of Economics.

Um, and their theory is that productivity shocks are really key to understanding these fluctuations in the economy.

Okay.

Um.

Now.

All this is great, right?

We do have productivity advances and technological advances.

But the issue is this is more of a long run thing, right?

Explains long run growth.

Remember the A in the solo model right.

That's a but we're saying sustained productivity growth in the long run turns into higher income in the long run.

Is is more appropriate.

Because the problem with this theory is that it's hard to explain recessions, right, if it's predominantly driven by productivity or technology shocks.

That means that every time we're in a recession, it's because of technological regress or a slowdown.

That's not really what we tend to believe to be the case.

We saw the financial crisis.

Not really to do with technology, one can argue.

Um, these these how many?

12 episodes of US recessions.

Hard to argue that that that these recessions are driven by productivity, uh, regression regressions.

Um, although one saving grace for this is to interpret, um, these productivity shocks as things that can change input prices, right?

Like oil.

Okay, maybe the discovery of new technology like shale gas or whatever in the US after the crisis have significantly reduced energy prices.

Um, these input prices can can act as these can obviously change firms labour demand curve.

And that could be a so when oil prices rise,
um, firms are less productive in that sense.
And that leads to recession.
So that that is a potential way to think about
this.
But oil has become less and less important in the
economy.
But we haven't really seen fewer and fewer recessions, right.
So the oil driven business cycles, which was very prominent
in the 1970s and 1980s, is less and less.
Less and less really that important?
Uh, today.
So again, I think the idea, the consensus is that
we're not a consensus, but the general feel towards this
is that productivity is really, really important for long run
growth theories.
But as something to explain economic fluctuations, uh, it meets
a few, uh, difficulties and challenges.
Now, the second is the Keynesian theory, obviously, Caden's being
a fantastic, uh, remarkable economist, but not uncontroversial, um, has
a very, you know, very appealing idea as well.
Right.
His view is, look, this is nothing to do with
economic fundamentals or let's take take his the extreme version
of his story.
Right.
Economic models were fundamentals would be things like technology right.
Or you know, um, uh, productivity or input prices or
whatever it is, or even monetary, uh, shocks.
He says, look, if people start becoming pessimistic, it's going
to lead to all these cascading effects.
Okay, so how does this work?
Well, let's say that your firm, your company and your
pessimistic about the future, what are you going to do?
Or are you going to not expand your business?
You're going to maybe start to fire some people you
want to contract, right?
But the cascading effect is that once you do that,
you're going to affect lots of firms around you.
For instance, your suppliers.
Right.
You would need fewer things from your suppliers.
And that leads to a fall in demand for labour
from your suppliers.
And these suppliers obviously link to other firms.
And that creates a lot of companies start to cut
back.
Um, when you start to cut back and we saw
the labour demand curve moved to the left, what's going
to happen to employment?
Lots of people are going to lose their jobs.
There's going to be higher unemployment, right?
Once there's higher unemployment.
And please be careful because every logical sequence is really
important.
So I hope you're paying attention.
Okay, I'm talking, but every word is important here.
Um, when unemployment rises, consumption falls, right?
Because you don't have jobs, you're not going to you're
not going to.
You're going to save more, you're going to consume less.
And guess what happens when consumption falls?
Well, if the goods and services that we're buying from
other companies, that demand has fallen, these companies will suddenly
have to start to cut their labour or their employment
too.

Right?

So it comes in many different ways and that becomes cyclical.

We're going to talk about multipliers in just a minute.

But the idea is that just the change in sentiment animal spirits is only one one animal spirits could also be you know, if I see everybody doing this, I have this herd mentality, I'm going to do this as well.

But it's just a general change in sentiment or confidence could lead to these, you know, recessions or even depressions.

And this doesn't even have to come from big shocks.

It could be small things like a labour, sorry, a stock market drop.

Right.

The stock market is not doing well.

Oh is this going to is this meaning, is this heralding some kind of recession coming.

Maybe we should save more firms should be more cautious.

So in that sense, Cain said, even small shocks can

be really amplified through these sentiment changes.

So again, nothing to do with fundamentals but just confidence levels.

Okay, so that's his theory.

And, um.

And as we mentioned this, the multiplier effect.

This could also be a self-fulfilling prophecy.

Again, self-fulfilling prophecy is that let's say there was no problem with the economic fundamentals in the first place, but because I believed that there was going to be a recession.

It actually happened, right?

All these things, the actions that that resulted from my being pessimistic about the economy, led to a real recession.

So in that sense, self-fulfilling, self-fulfilling.

Without that confidence drop, we would have averted this recession.

Um, so we can think about some examples, including jobs and stock markets, as I mentioned, as potentially a trigger.

Right.

So in the case of 1929 or September 2008, um, the stock market declined, right.

And after the stock market declined, consumer confidence fell.

And what happened?

They didn't want to spend that much anymore.

So if they wanted to spend less, firms have to cut back production.

Production lay off employees, and these newly unemployed workers start to buy less and leading firms to cut back even more.

So each round of layoffs could damage the economy.

So these things could be a trigger.

It doesn't have to be the stock market.

It could be lots of things.

You don't believe in your government.

Okay.

Um, you don't like your next incoming president?

Uh, people will flee.

Um, let's say take the case of China.

China's government cracks down on its technology companies, and foreign investors are very afraid of what's going to happen.

So that leads to a big drop in consumer confidence.

So none of these things are real in the sense

that it's not economic fundamentals that's changing, but that can lead to really devastating consequences.

And that was kind of his theory.

Now, a third prominent theory has to do with monetary

or nominal shocks, which kind of follows on what we have learned in the last lecture.

And we're going to talk a lot about this next week, is that changes in inflation or money supply or inflation because of money supply can lead to, you know, recessions or booms.

So let's consider the following.

Um.

There's a contraction.

The money supply.

Remember, from our last lecture, we said we want to keep money supply growth roughly in line with real GDP growth, right.

Because too much money chasing too few goods leads to inflation and it leads to deflation if there are too little money.

Right.

So the central bank's goal is to keep money supply kind of in line with the real economic conditions.

And they do it by changing the federal funds rate, at least from the US.

So let's suppose as something calls the decrease in money supply and hence the price levels will fall.

Right.

Because there's less M2, less cash buying goods, price levels fall.

But now again turn on your thinking.

That's what's going to happen when prices fall or when prices fall.

Well, we know that wages are stuck, right?

But if prices fall, that means that what that firms are not going to make as much profits.

So they have to cut down labour.

Right.

So just because of price fall and downward wage rigidity, they're going to, uh, shift the labour demand curve leftward.

Now suppose that wages can also fall without the rigidity.

And wages kind of can fall along with price falls.

So maybe you can still employ these people.

Right.

But because of these rigidities you're going to have to downward.

You're going to have to have a labour demand contraction.

Um, money supply is one way.

The other is through interest rate.

As we mentioned from last lecture, when interest rate goes up, real interest rate goes up.

Firms are going to borrow less, right.

Because that's the cost of capital.

Banks are going to lend less.

Consumers are going to borrow less.

Less to buy houses and automobiles so that contracts economic activity.

So monetary shocks.

And we're seeing that right now.

Right.

We hike up the interest rate.

And then there's economic contraction.

Right.

So we see not necessarily a recession but a fall in GDP growth has a lot to do with these monetary factors.

So that's the third prevalent theory about why we see these booms and busts.

Okay.

So we did talk about multipliers.

So let me just, um, uh, just, uh quickly, quickly.
 Um, uh, reiterate this.
 So when household consumption falls, maybe because, um, you know, there's higher unemployment or because of pessimism, any of that could happen.
 Right?
 Any of these reasons can lead to, uh, or any reasons that lead to consumption falls is going to lead to a fall in firms revenues.
 They cut labour.
 And that leads to more unemployment.
 More unemployment leads to less household income leads to more consumption and then another round.
 So these can be multiplied over time.
 Different ways of cutting back labour and income and consumption and so forth.
 Okay.
 Um, and along with multipliers, could be accompanied by things like drops and asset prices.
 As we mentioned, housing prices, a rise in mortgage defaults because interest rate goes up.
 Right?
 Uh, if you if you lose your job and you took out a mortgage, what's going to happen?
 Well, you might have to default on your mortgages.
 So that leads to another potentially banking problems, right?
 Banking problems.
 When banking banks have problems, they can lend less to consumers.
 And that leads to a different round of, of of um economic problems.
 Uh, as we mentioned, household balance sheet or the firm balance sheet can also contract.
 So I can borrow less because the assets that own the housing or the stock, stock, uh, stocks that are owned are worth less.
 Right.
 And I can borrow less because my assets are worthless.
 And that leads to, again, a credit cycle of perpetuating these, um, economic downturns.
 Okay.
 Okay.
 So finally, let me just conclude by saying this is, um, a downward wage rigidity multiplier effect of the, uh, the recessions.
 So again, this is pre-recession.
 One shock could be monetary, could be productivity.
 It could be Keynesian animal spirits.
 Right.
 Whatever it is that causes a labour demand shock right leftward.
 So this goes leftward.
 And because of all these multiplier effects, because consumers start to spend less of banks start to borrow less, their assets are worthless.
 Uh, borrowing is less frequent.
 And that leads to another round of labour demand cuts.
 And that leads to, uh, further leftward shift of labour demand.
 And this is the trough.
 And as we can see at this point, employment is really, really very much low, much lower than pre-recession, and unemployment is much higher.
 So when labour falls, real GDP falls.
 Okay.
 All right.

See you Thursday.
Thank you.
Yeah.
I don't know what it's like.
Yeah.
I think you like.
I know.

You.
I.
But.
But.
Yeah.
Okay.
Oh, yeah.
Oh.
How much?
Okay.
And.
It's.
Yeah.
Oh.
Okay, let's get started.
Um, so last time we left off at a place
where we think is important.
And I just wanted to, uh, drive this home to.
So that we we went over it a little bit
quickly.
And that's the concept of multipliers, right?
What's important to realise that in all, in the economy,
whether it's expansion or contractions, there's always a multiplier effect.
And the multiplier effect is why it's, uh, first of
all, there could be um, uh, amplifying multipliers can be
amplifying the initial shock, and the initial shock can be
actually quite small with the Keynesian kind of view, where
animal spirits is a dominant driving force of business cycles,
a small shock can lead to, um, large impact on
the economy because of these multipliers.
So let's just see how that works.
Uh, as we just left it off a little bit
too quickly last time.
So you could really start from either here or here.
Right.
But let's say that it starts from consumption falling.
And this could be because of the wealth effect of
stock market decline.
Housing prices decline is we're going to really look at
the 2009 financial crisis, um, in detail.
Or it could be just some sentiment.
Right.
And, uh, when this declines, when people want to spend
less, this hasn't a direct impact on firms because firms
rely on consumers to spend in order to sell stuff,
hire workers and make profits.
And that turns into household income, as we've seen in
lecture one, they're all part of the same circular effect.
So once firms revenue falls, a key thing is that
labour demand is going to shift to the left and
labour demand shifts to the left means that there were
fewer workers.
So employment is going to fall.
So rising unemployment as income falls and this leads to
even more consumption falls, is we're going to see with
the crisis in different kind of crisis, for instance, in
2007 to 2009, it started off with housing price, uh,

collapse, but then it really, um, got spread over the entire economy and for the reason of the multiplier impact. Right.

So this is the first wave of, you know, layoffs.

And then that leads to less household income and then even more fall in consumption.

Then again, the cycle continues until there are different rounds.

Effects of labour demand fall.

Um.

And so.

And also the multipliers don't have to just come from this circle.

But it could also because they coincide.

Remember we talked about movements when the economy is not doing well.

Asset prices tend to do uh tend to fall as well.

Stock prices, housing prices, all kinds of assets.

So you have less wealth, right.

As households feel a reduction in the wealth effect.

So lower wealth, they're also going to spend less.

And then again, that sort of circular effect happens.

Um, we're going to talk about this.

This can lead to banking, uh, defaults as bank hold many of these mortgages and banks when they fail or they have less liquidity or they're less, uh, um, the smaller net worth, they're going to lend a lot less.

Right?

But remember, the credit market, these banks loans are a driving force of the economy because these businesses want to borrow so they can expand business and then purchase equipment and hire workers and pay them and so forth.

So when banks fail, that leads to another round of, um, a real economy multipliers.

Note that these are happening in financial markets, right.

But it leads to the real economy precisely through the ways that we we discussed.

Now, some of the crises that you're going to see in the real world are purely financial crises, right?

Stock market collapses or whatever.

It doesn't have to lead into a full on, full scale economic crisis.

When it does, it's through these multipliers that we talked about that this actually leads to real economic variables like consumption, investment falling.

And the weakening of balance sheets for households and firms means that both of them can spend less.

So when there's less spending, it affects others and others affect, you know, more people and so on and so forth.

Remember that companies are always kind of in a network, right?

You have downstream players, upstream players.

So when you are, um, like Boeing, when you cut down on your demand or you cut down on your demand for, you know, labour, then that's going to affect all your suppliers, all these, you know, hundreds of inputs, if not more, uh, related to Boeing.

We'll also have to cut back.

And that then starts to start to spread throughout the economy.

So and this is in the way in which these multiplier effects actually works.

And as we've seen, this is the first wave of the labour contraction.

And then because of the multiplier effects, it can lead

to further rounds until it really hits a trough employment.
Where.

And now we're going to talk about recovery and how economies naturally get themselves out of the bust cycle at this point.

Okay.

So switching to this lecture.

Okay.

So let's talk about recovery.

How do economies actually recover?

Now there are really two ways.

Okay.

One is a natural way.

And that's embedded in the market mechanisms.

So it's market forces.

And we're going to study why.

And second is active government policies which we're going to discuss in detail in at length in the next week.

Now why do we follow the central bank so much.

Well, first of all, the interest rate is really important for financial markets, right?

Second, they seem to be judging.

They have to judge on where the economy is going.

Is it going to be worse?

Is it going to be good.

And we're going to see why their judgement is so important, because a little bit of mis or a miscalculation can lead to, um, a massive errors.

So for instance, uh, Alan Greenspan was a central bank, uh, fed governor in the US in the 1990s, I

believe, and he kept interest rates for a really long time, low interest rates low for a very long time.

And that created all kinds of booms, including dotcom boom, including the housing price boom, which eventually, some people believe paved the path for the 2007 crisis.

Okay.

And we're going to try to understand why interest rate really has to be these fed policies or monetary policy, and fiscal policy has to be really aligned with the status of the economy.

Right?

You do you misjudge that and it can lead to quite serious long term consequences.

So we'll discuss about that.

But these are two ways through which economies will get themselves out of the recession.

But remember recession is a more you know, when we talk about business cycle fluctuations, it's over the short term, right?

We've seen, what, 12 recessions in the US, uh, in the last, uh, you know, since the 1920s and each time it comes out.

But how does it come out?

So starting from the market forces, um, idea, uh, the first involves inventory.

Okay.

So what does that mean?

So we talked about inventory.

Lots of unsold stuff.

Right?

When you're in recession, you as a business have lots and lots of lots of inventory because you couldn't sell it.

Right.

But over time, this inventory tends to get depleted.

So for instance, you can think about these long term

durable.

So we can't talk about inventory for non durable goods like consumption goods because they can't store them for for a long time.

Um but think about refrigerators.

Think about cars.

Think about housing.

These are all inventory.

There was um so so one thing we didn't mention, but also important is that during recessions, uh, firms, uh, just, you know, have lots of inventory.

And the way to measure this is to look at capital utilisation rate.

So remember that capital and labour and technology of course, are the three key important inputs for a firm.

Right.

And um, capital utilisation being low, for instance, that 60% or whatever it is means that you're you have lots of capital around sitting around, but you can't fully employ them.

But of course they have depreciation and it's stuff that you couldn't, you can't use to produce and to make more profits.

So low capital utilisation is a sign of uh, is a reflection of, of large amount of inventory.

But talking about rebuilding.

So at some point people are going to start to spend.

Right.

Or at least in normal circumstances.

Right.

You've waited a long time, you think maybe the prices have bottomed out, huh?

And you've been waiting, you know, for a year to buy this, this property, and you can't wait any longer because at some point you're going to need to satisfy your demand, right?

Uh, whether it's durables or it's housing or things like that.

And then you start to buy again.

So inventory, this takes time to wear off.

And once inventory is gone or at a slightly lower level, then these firms start to hire again.

Right.

They will shift back the right, right, right word shift the labour demand curve and that start the cycle continues when they have a worn off uh this inventory.

Um.

Okay.

We're going to take a look at, you know, so.

Well, here, let me mention this as an example.

Um, since the 2009 crisis, which is more than a decade ago.

Um, seems not that long ago, uh, at least for somebody like me.

But, um, uh, there was a lot of, you know, overbuilding of property in the US.

Um, but after that cycle, you know, people, obviously the construction sector really shrank.

Uh, firms were not building new stuff.

Uh, a lot of new buildings over time.

And then now the property, you know, has totally kind of the inventory has warned or warned off, worn off.

And lots of people are saying that the US may be currently not going recession because property being the most cyclical aspect of the economy has been pretty, you know,

high in demand and low supply because of the 2007 effect.

And so in this cycle, it wasn't like there was too much supply of housing.

So property is a very important part of this, even though it's not the necessarily kind of something we focus, but it is a very cyclical aspect of the economy.

But this also is true for cars, right?

Cars and refrigerators and durables, as we mentioned.

Uh, the second is potential technological advances that happen after crisis.

Now there's a very interesting, uh, historical pattern, which is that there tends to be a lot of productivity improvement and technological advancement after crises.

Now, you can think about it this way.

So let me give you an example.

First of all, let's say after Covid, um, you know, digital economy really bloomed, boomed, and there were things like obviously apart from zoom and all that, but there was telemedicine.

There was a lot more online, uh, retail.

Um, uh, which, you know, for this part of the rule has fallen behind lots of developing countries because developing countries didn't really have that very strong retail network as parts of this world.

So they were very far advanced in this digital economy.

And suddenly the pandemic led a rapid catching up, if you will, for advanced economies.

Um, but there's another reason that recessions are not necessarily always a bad thing.

And this is related to the concept of what's called creative destruction.

Okay, creative destruction is saying or part of it means that when you have a recession, lots of the weakest firms will be ousted of the economy.

Right?

Because some of these things are, you know, the tide has turned against them and the economy is pretty, pretty weak.

Then who goes first?

Well, obviously the weakest linkages go first, right.

So the lowest productivity firms get out first.

And what you have is you have more resources to allocate to the more productive firms.

And then there will be new firms entering.

If all these resources were sucked up by bad firms, if you will, then it also prevents new firms from coming in because the bank loans will be directed to the existing firms and all that.

So creative destruction is, in a sense, in which it could potentially happen during recessions or a negative shock where you allow some of the bad, the bad firms and also in recessions is when companies make these are often very likely to make these dramatic or drastic changes.

Right.

For instance, um, uh, after a recession, they really focus on cost cutting.

So then they adopt better technologies.

They maybe they want to hire fewer workers and so forth.

Right.

So that leads pushes them to make some changes which they were happily, comfortably not doing when times were actually pretty, uh, pretty stable and pretty good.

Um, and uh, and also, um, uh, another reason is

that when, you know, companies are suddenly with this shock, um, they understand about the importance of survival, and they strive to make more innovative effort to stick around and realise of all the things.

So this is actually something that happens sometimes.

And then when you have productivity boosts, right.

Remember the real business cycle theory, uh, when you have

that kind of expansion, let's, let's, let's talk about this,

um, this specific mechanism when a rises when when productivity rises, then that means the marginal product of labour is higher.

Right.

So workers are more productive with better technology.

And that amounts to a rightward shift of the labour demand curve.

Remember that the labour demand curve is um, you know, the basically a marginal product of labour, uh, kind of curve which is downward sloping, more labour, uh, a lower productivity, lower, um, uh, lower contribution.

But when each worker is more productive as a firm, everything else given you want to hire more workers.

So the right word shift of the labour demand curve also happens.

Uh, in a case.

Sorry, this is a typo.

Case B technological advance.

Um, a very important part.

And the reason why we really wanted to talk about the financial markets and financial system with banks.

Again, this again, this brings together everything we have learned.

I mean, this is a very helpful series of lectures

because it utilises all the building blocks we have spent

time learning up until now is that the banks also

play a big important role.

Right?

So as the banks balance sheet starts to be healthier,

uh, you know, loans start to be repaid, they have more space to make new loans.

And as we mentioned there, credit intermediation is very important for the real economy because without the ability to borrow from financial or from banks, whether you're a consumer or a firm, you can't spend more, you can't hire more, and so forth.

So as banks rebuild their balance sheets and they become healthier, um, there's more lending.

Okay.

There's more lending.

Generally when there's more credit in the economy that's typically associated with more economic activity.

Okay.

So all of this to say that, um, we have

now, uh, a right word shift of the labour demand curve.

Um, so here we were at the trough.

Okay.

And then a partial recovery.

So remember that a partial recovery in the first instance also can lead to multiplier effects.

Right?

There are multiplier effects on the way down and multiplier effects on the way up.

Again the reasoning goes that, you know once you start to hire more labour these people have a job or their wages go up.

Sorry, sorry.

This is still at the point of downward wage rigidity.

So these the wages are not changing at this point because it's a small partial shock of the labour demand curve.

So maybe you want to think about it as fixed contracts, fixed wage contracts for so so for small movements of labour demand there there's no changes in wages.

Right.

Um, and we'll see when the labour demand is, you know, fully onto the right, uh, increases by fully, then the wages are going to start to rise.

But you can think about this as potentially just contractual and small, uh, rightward shifts.

The labour demand doesn't cause the wages to rise yet.

But then at this point you also have the multiplier effect in the other direction.

When some of these households start to spend, that means more demand for some firms products and they start to hire more.

And again the cycle goes in the more positive direction until you go back to the labour demand.

Um, uh, sorry.

So, so basically you have a labour demand, pre-recession shift back.

And this at this point, we're only doing a partial recovery.

Um, and then we'll talk about the full recovery.

Recovery?

Uh, second is expansionary government policy.

Now this is where policy plays a role.

Remember that when before I introduced this series of lectures, I did mention that there is room for government to play a role.

Governmental institutions, how they handle the economy is very, very important for the stability of the economy.

We want to see precisely why and where sometimes, uh, at least from historical, uh, experience, governments have failed to produce these hyperinflationary episodes or very long term recessions.

A lot of it has to do with government policies.

Now, um, so let's look at expansionary monetary policy.

So we're going to focus on monetary and fiscal policy.

We hear that a lot.

Um, when we talk about expansionary monetary policy, it generally means lowering the interest rate.

We talked about expanding money supply, but that amounts to lowering the federal funds rate and more money in, uh, the economy tends to produce inflation, right.

Because again, there's more money going around for the given level of economic activity.

But how does, um, lower, higher inflation, uh, actually help the recovery?

So part of the part of the, the, the reason is that when we have higher prices, remember that wages were still at this downward wage rigidity, flat line.

Once we have higher prices, that means that firms can make more profits given the same level of wages.

Right.

So in that case what do they do.

They're going to expand.

So we're going to shift labour demand curve to the right.

Because again the wages haven't really changed.

But now I have more inflation means more uh more uh more higher prices and more profits.

Um, higher inflation also lowers real wages if wages are stuck.

Right.

And when we know that when real wages fall, labour demand also tends to rise.

So in conjunction to the fact that prices the output prices have risen but the real wage has fallen, they're going to start to hire more.

So this is what monetary policy can do for you.

You know, if there were no inflation, there was actually deflation.

You're in a pretty bad situation, right?

Think about what happens when you're in deflation.

If you have a deflationary episode and you're still stuck in a recession and things are going to become worse and worse because the prices are falling, you're going to even hire a fewer worker.

And because your wages can't just downward, right?

Your real wages are actually rising.

So for companies, they're actually going to, as we've seen in the last lecture, a little more unemployment.

Right.

So in this sense a little bit of inflation is good.

And this harks back to what we have mentioned in our monetary policy lecture that you want to moderate degree of inflation.

And one of the purpose is not only just senior edge, but also to boost the economy a little bit.

Right, because of this mechanism.

And plus lower interest rate have the following important role.

Lower interest rate as we as we know, boost things like investment, right.

Because that amounts to a lower cost of capital and investment is higher.

That leads to more GDP.

Y equals C plus I plus g .

Lower interest rate also amounts to a higher level of consumption because then you can borrow more, right.

Because the cost of borrowing is lower.

So you can buy a house, buy a refrigerator, buy these durables based on a lower cost of financing.

So these these are the two reasons two channels through which, you know, interest rates and inflation, through which monetary policy actually can boost the economy or get an economy out of a recession, which is why we're watching so closely.

What is the fed going to do?

What is the Bank of England going to do?

You know, again, during Covid there was a massive stimulus.

Okay, let's just think about what happened during Covid and try to use what we have learned to see how that would work.

So during Covid, let's take the US.

And similarly what happened to the UK?

Households got paycheques right remember okay.

So first of all, what got got us got us into a deep recession for Covid was the fact that, well, there were no B, you know, no interactions, nobody's going out.

Then services contracted and then, you know, you led to your massive leftward shift of labour demand.

There was a little bit of substitution going on with online stuff, but obviously a lot of these face to face economic interactions had to be a, you know, a completely halted.

And, um, so unemployment really spiked.

Um, at this point, if we were just going to leave it like that, what's going to happen?

Well, it's potentially, you know, people are going to buy fewer and fewer things.

So there will be deflation and then we can it can lead us into a spiral of worse and worse situation.

Right at this point, what happened was these governments that, you know, had made a huge stimulus package.

Right.

And take the US example, handing you Paycheques, uh, the goal is to have you go and spend it.

Right.

Once these households got these checks, they did actually go spend it, and they went to buy lots of things.

And then that led the economy to get going because the labour demand curve shifted back, back, uh, shifted right, and so forth.

Now eventually people blame this to have caused a lot of the inflation that we saw afterwards.

Right.

Because there was a lot of money around real GDP didn't actually keep up.

There's some debate about that because people argue also it's the supply side, you know, breakdown of supply.

Uh, supply chains, uh, led to a decrease in output.

And that drives up prices and also inflation.

So note that whether it's the demand side or the supply side can also all lead to these price dynamics.

So the whole point about the stimulus package was to, uh, um, to kind of get people to spend.

Now interest rates were also lowered.

But remember, what do we have as a challenge for the interest rate when it's very low?

What's the challenge?

Does anybody know?

Harking back to what we learned in monetary policy.

Yes.

Yeah.

So the nominal interest rate, the lowest it can be is zero.

I mean, yes, you can potentially lower it, but negative interest rate are not very common unless you're a Switzerland.

So you have the zero lower bound.

So at this point monetary policy you can't lower interest rate further.

And this is when they they pursued other kind of measures of expansionary monetary policy, things like quantitative easing.

But that was more relevant in 2007 to 2009.

But in any case interest rate were very low, were lowered and they gave them consumption vouchers.

Now, what would happen if they didn't spend this check?

Would this policy be effective?

No.

Right.

They just keep it in there under their maps or in the banks.

It doesn't amount to actual economic activity happening.

So lots of countries think that these these checks were not going to be very effective.

Now Americans delightfully started spending them anyways because many of them live from check to check.

And they were fine with just spending what they had.

There was a lot of spending going on, so it was actually pretty successful both here and in the US, but not necessarily for the other countries.

So one way to get around this is potentially to give you expiring consumption vouchers, right?

Vouchers.
 You don't spend it.
 That's it.
 Right.
 And so that's another way around it.
 But you can see now why these stimulus packages for things like these deep inflation's sorry deep recessions are really important.
 But they're largely it works through these channels okay.
 Um, so when we have a little bit of inflation, labour demand starts to shift back.
 Okay.
 And that's represented here.
 Now putting all of these things together, how do we get a full recovery.
 Um.
 So we talked about the partial recovery when inventories start to wear off and then technology or it could be just, you know, banks start to lend some natural market forces, or it could be driven by the fact that, you know, there's some active monetary policy.
 And at some point, um, if the labour demand is, you know, shifts very much to the right.
 So there's a very, um, uh, you know, and the multiplier starts to happen.
 Right?
 So the multiplier starts to happen.
 You have continuous labour demand shifts.
 Now, if the labour demand shifts to the right at and then we're at 0.4.
 So at this point you've kind of.
 The the demand increases large enough to really drive up wages.
 Okay.
 Now we talked about this asymmetry, which is that it's very sticky on the way down.
 So it's hard to cut wages, but it's not hard to raise wages.
 Right.
 When we were in this section.
 So from 1 to 2 or 2 to 3 when we have the partial recovery, as I mentioned, I don't want to confuse you.
 Um, you know, if it's a very small partial recovery, you're not going to get wage increases because wage contracts are staying fixed for a while.
 But once you get a big enough boost that actually lots of firms are hiring at this point, so they drive up wages above the pre-recession.
 Equilibrium wage rate.
 So in other words, the equilibrium wage rate at this point where firms demand is on labour is now higher than the equilibrium wage rate before you're no longer binding to that current wage and wages start to rise.
 Okay.
 Okay.
 So now here comes the real important point.
 Now this is obviously the quantity of labour.
 Right.
 So we saw from recession Labour fell right.
 Unemployment rose and unemployment started to fall over time.
 And now at this point you have kind of full employment.
 Right.
 We're at the vertical part of full employment.
 Now this leads to a very important concept related to

what's called the Phillips curve.

Okay.

And Phillips curve is basically saying that there's a trade off.

You want lower end employment.

Well guess what the cost is.

The cost is higher inflation.

How do we see that here?

At this point, you can stimulate the economy and what's going to happen.

The labour demand curve will just move.

Right.

Word and wages are just going to go up.

But what's happening to equilibrium employment.

It stays the same.

So does that mean that GDP rises as you increase labour demand?

No, right?

Because you just have to fix the amount of labour.

Labour is not.

Employment is not going up.

And all this is happening here, you're simply getting more inflation because wages rise, the prices rise, you have more inflation, but without more output.

At this point, when you're recovering here, as employment starts to rise, you're getting more and more GDP.

But at this point.

Higher labour demand simply leads to higher inflation without any additional GDP or economic impact.

That's a very, very important concept.

Why?

Because this goes back to how skilled, um, a government is in handling the economy, right?

If you are Alan Greenspan, I'm going to pick on him today.

Um, and you're kind of just stimulating the economy by keeping interest rate really low.

And all people are doing is starting to hire more and more people, booms and expand.

But you've really reached full capacity here.

All you're going to get is eventually going to get a lot of inflation, okay.

With no additional output.

So Phillips curve is a trade off between more output or more um, uh, or lower unemployment.

Which one would you prefer?

Right.

Lots of populist governments before they get elected.

They prefer to have low unemployment.

So they start to they start to do these stimulus effects.

Right.

And if you over stimulate, then eventually you're just going to have more inflation.

But by that time they're already elected.

Right.

And at that point we know inflation is very bad if it is especially high.

So this is very important to understand that, you know, as a government you really need to know very well what you're doing.

You need to read the state of the economy.

You need to understand is the labour markets quite tight.

So for instance, in the US before the onset of the of inflation, it could very well be that labour markets were already tight and interest rates were still too

low.

So in other words, they started hiking interest rate too late.

Right.

So when they say you're behind the curve, if you start to start to hike interest rate too late, then you might just very well get this kind of situation with very high inflation.

Okay.

So that's the concept of the Phillips curve trade off that is worth mentioning.

Um.

Okay, so just to repeat as point four, after going through the cycle of recession and then recovery, uh, where monetary policy played a role in wages is higher.

Um, and that that tends to lead to more inflation.

Now, all of this we have, uh, the analysis that we have looked at is based on the notion of nominal wages.

Right?

Nominal wages is what we pay the workers.

Real wages is what they actually reflects their actual purchasing power.

Now this is kind of this kind of analysis.

We'll also go through in a similar way if rather than looking at nominal wages, we look at real wages.

And as we mentioned with a little bit of inflation you can kind of reduce real wages.

And firms will start to shift right where the labour demand curve.

Right.

So the analysis is similar.

But even though it's not exactly the same.

Any questions.

No.

Okay.

Okay.

So so far we talked about contractions, monetary policy, market forces to get out, get an economy out of the bust cycle.

And so, uh, the same thing, uh, will apply for, uh, expansions.

Right.

Why do we see some booms and busts or some booms at certain points in time?

And this again could also be for the three main reasons, or three main theories of business cycles that we mentioned about for recessions.

Right.

So again, it's things like real business cycle.

So that means technology booms okay.

Technology booms makes firms hire more workers, hire more workers leads to that multiplier effect.

Or it could be animal spirits like sentiment pain.

So for instance, here Apple and others become really optimistic about the future.

So, you know, you can think about this AI revolution, right?

AI revolution seems to make people think that somehow the economy is under, you know, massive transformative effect, and everybody's going to be much more productive.

Just like when we discovered electricity, even though or the steam engine that wasn't really perfectly clear at that time.

And lots of these companies start to make more investments or hire more people hire more, you know, I, uh, or engineers or coders or that, or just start to

invest more.

Then obviously the firms that they invest start to do better, and that creates that network effect.

Um, in that sense, this demand for labour will just become a shift to the right.

Um, and firms that supply the technology to Apple and to others will also start to hire more workers.

And that starts to lead to a, um, a rightward shift the labour demand curve.

Now notice what is different between this labour demand curve under an expansion.

How is that different from a contraction?

Well first of all we have an upward sloping supply labour supply curve because at this point with contractions you're simply raising wages rather than uh, falling wages and that and that downward wage rigidity becomes horizontal.

So at this point pre expansion you raise a labour demand and that raises wages before the multiplier effect.

And then through these round of multiplier effect you get um uh to the peak labour supply.

Often it's already at the point where there's full employment. Right.

Uh here is the point where there's full employment and then peak wage becomes higher at the equilibrium wage is higher.

And here the Phillips curve, uh, trade off starts to kick in in the sense that when you have booms, eventually, basically you're not going to see additional increases in output but only inflation.

Okay.

So this is where there's full employment astern just to remember that.

Okay.

So, um, uh, finally, uh, you know, as kind of a, um, an example, uh, kind of bring all this together.

We're going to look at, uh, the recession of 2007 to 2009.

Okay.

So let me give you a little bit more context for what happened before.

Remember, in the US there have been many, many cycles, business cycles and lots of fluctuations.

And if you remember the graph that we looked at, there was also a.com boom in the, in the I think in the early 2000, uh, in the 1990s actually when it started and then a bust, um, there.

Okay.

So historically lots of things are repetitive patterns that leads to booms over time.

And one thing it often starts out with is rising housing prices.

Okay, rising housing prices is kind of, um, sometimes a leading indicator of certain things that are happening.

Why?

Because people feel optimistic, interest rates are low and you start to buy.

And first of all, on the demand side, you start to, uh, you know, upgrade your house or newcomers start to buy, uh, their first house.

Um, and on the supply side, the property sector, the construction sector starts to expand.

They see, you know, they feel good, they feel optimistic.

They think they're going to make money by building and selling these properties.

So properties tends to expand.

Now this has been really a common pattern uh, throughout history and also across countries.

And then what you see is housing prices really start to rise.

Right.

But the question is how much um, or what is the price that is sensible.

Right.

How much do housing prices arrive?

That actually makes sense.

And here I want to introduce the concept of a bubble.

Okay.

I don't know if you guys have heard of this concept before, but a bubble is basically when the prices go exceed beyond what the fundamentals justify.

Okay.

So for instance, when you're in a booming economy, you're I don't know, you're in Indonesia, you have millions of people and your economy is doing better, your economy, your, you know, from the long run solo growth model, you're catching up.

Housing prices going up, uh, along with national income per capita.

Makes sense, right?

It's not a bubble.

It's supported by economic fundamentals.

But when you're in a country like Japan in the 1980s, your land prices quadrupled in a very short period of time.

And your economy is not growing that fast.

But, you know, people are buying these housing and constructing houses.

And so when you when you start property developers start to build out, you know, obviously that drives up land prices.

And the higher the land prices are, the higher the housing prices are as well, because they want to sell you at a higher price.

That becomes more like a bubble where it has grown faster than the economy in that sense, or it's not supported by economic fundamentals.

So I mentioned Greenspan for a very important reason.

Now, I'm not trying to say to suggest that he was really the cause of this financial crisis, but it's important to understand what has happened, what happened leading up to this recession.

Um, so when he was around, he kept interest rates low for a very long time.

Okay.

Now what?

Again?

Again.

Using again what we have learned.

What's the consequence of low interest rates?

One is we talked about inflation.

Potentially there will be inflation if you know more money, uh, than there is real GDP.

The other consequences is that it tends to drive up asset prices.

Again.

By asset prices we mean stock prices.

Um, we mean housing prices.

Why is that?

Well, if you want to think about the interest rate as the discount factor, right, the present value is worth

more if the interest rate is lower.
Or another way to think about it, uh, which is maybe more intuitive, is lots of people start to borrow, right when you have low interest rate.
That's what that's what happens.
Right?
Lots of people start to borrow.
Um.
Before the subprime crisis here, mortgage rates were so low.
So first of all, the down payment was really low.
Sometimes in the US across different states.
You didn't even need to put them put down a down payment and you can get a house kind of like for free.
All you need to do is take out a mortgage.
Okay, I'm going to repay you.
And, um, the interest cost was very low, right?
Because interest rates were low and I didn't even need to put down an initial down payment or even very little.
Now the thinking was that housing prices are going to continue to rise.
Okay.
That's a common, um, common mistake.
Now, in the chapter before, there was something called rational expectations.
And there was another kind of rationale which was backward looking, okay.
And you looked at historical prices and they kept going up.
And so you're going to think, well, they're going to continue to rise.
And that's the mistake that many people actually do make.
So once they think that housing prices rise, does it make sense to buy this house even if I can't really afford it?
Yes it does.
Right.
Because the value of the house starts to rise, I'm going to be wealthier.
So in case I decide to sell the house to repay the mortgage, everything's fine, right?
So that's the kind of problem.
As you know, coming back to this low interest rate, is that because interest rate is low, lots of people borrow.
That tends to drive up asset prices.
You can borrow to buy stocks.
And also when when you're discounting future firms profits with a lower interest rate than the present value of the firm's profits actually higher.
Right.
You're discounting something that's low.
And that also boosts the equity value of the the equity value of these companies.
Now that's also again what happened during um, uh, recently during the Covid, we saw, first of all, 2020 was like an utter disaster initially for 2 or 3 months and then asset price, the stock prices for these technology companies and lots of companies started going way up to unimaginable levels.
Many companies are now only a half of what they were worth at the peak in 2021, or even less.
Why?
Because as interest rate fell as monetary, there was a lot of quantitative easing.

So a lot of money out there to buy up the assets, to buy the assets that drive up the prices.

Right.

So so again, low interest rate and high housing prices.

So as people started to, um, buy more houses and a lot of these, uh, property developers started to, and then banks start to lend to these people who really couldn't even really afford the houses, but still bought them anyways.

That's when that's what paved to lead to the subsequent, uh, trouble.

Right.

So again, so the under uh, so the background, the context is low interest rate, high asset prices and rising housing prices for a long period of time.

Okay.

Now what happened?

Um.

So then housing prices started to fall.

And why did the housing prices start to fall?

What?

Because when it's a bubble, it's actually not sustainable.

At some point, people are going to realise that.

Whoa, this is getting way out of line.

Okay?

And there will be an initial round of people who are going to be very pessimistic about this housing price and start to sell, and that can lead to others following the same idea, or at some point you just can't climb any further.

There's absolutely no fundamental supporting it and it starts to fall.

Now with a falling housing prices, that the two things you always want to analyse, what happens on the demand side or what happens on the supply side.

Okay.

So the easy part of the supply side is that it's going to contract, right.

Housing prices fall.

These property developers are going to lay off workers.

They're going to build less.

And you know, and that leads to a labour demand curve to the shifting to the left for the property sector.

The property sector low initially.

But the property sector actually employs a lot of people.

Right.

A lot of workers.

So I don't know, it's millions of workers in the US.

And by the time part, by the point at which there was a full housing bust, uh, only half of the employment in the property sector was left.

Okay, now let's look at the demand side.

What are two things that would happen when housing prices start to fall?

The first one, easy one, is again, you want to think about wealth effects, right?

So you own stuff, right?

You have your income, right.

And you also have wealth which consists of stocks and housing.

Right.

One one is a stock variable.

One is a flow variable a float variable being your

income.

So when your housing prices falls you are also less rich right.

Once you realise that oh geez, you know my house was worth £500,000, now it's only worth £300,000.

I'm a poor, so I'm going to spend less.

The other way in which it affects it is often people take out mortgages again based on their housing value.

So how does this work?

Well, once you buy a house I can borrow against my house, right?

You go to a bank and you say, I'm going to put my house for you as a collateral.

You lend me half the value of the house, and if something happens and I can't repay or I default, you seize my property, right?

So many of them did a double mortgage.

So I first of all, I put in very little down payment I borrowed to buy the house.

And once I have the house, I take out another mortgage to get another loan and start on go on a consumption spending spree.

That's actually a lot of what happened, uh, in this period, um, in the US and actually in other places, like including Spain with the housing boom and all that. Okay.

Now, so when the housing price starts to fall, I think about the, the, the, the mortgage you owe.

So, um, for instance, um, you know, I was I thought the housing price was going to be 50, 500,000 and it's actually worth only 300,000.

So when I actually start to try to sell my house, I took out a £400,000, um, uh, mortgage. Okay.

But actually, the housing prices fell by so much that it was worth less.

It's now worth less than the mortgage I took out.

Well, obviously you're insolvent, right?

So you might default on your, uh, on your, on your mortgage, which you, you borrow from the bank.

And what happens here is the bank then will have to seize your property.

So a lot of people there were 10 million foreclosures.

Foreclosures means that the banks seize their properties, uh, throughout the US, which is really a large number.

Okay.

And, um.

So so that's on the consumer side.

So lots of people, uh, actually bought houses that they couldn't afford.

And then they, uh, they lost a lot of money because they paid some, uh, they paid some mortgage, but then the whole house was seized.

Um, but also here.

Then the banks also start to, uh, become in trouble.

So first of all, let's just look at a graph of.

The housing prices that start to really rise very dramatically from the mid 1990s.

This is a Greenspan era all the way here.

And then a major collapse of, I don't know, 20 or 30%.

Right.

So again, if you had a 500,000, you thought your house was worth 500,000.

This is 30% drop.

It's very likely that your mortgage is going to be you owe more than you own.
And that's when the defaults happen.
And at this period when housing price to fall.
Talking about the labour demand curve in the property sector, uh, obviously this is investment, right?
As we said, investment is one of the components to GDP.
So investment starts to sharply decline.
But again the multiplier effect kicks in.
So initially this only happened in the housing sector.
And we said housing sector had seen labour falling and investment falling.
But guess what happens.
It starts to spread all over the economy right.
Consumers start to buy less because first of all, you have the first round of people who worked in property in construction.
They get laid off, they start to buy less.
And that leads to firms doing badly.
And then the second round, where other consumers from other sectors start to come in and start to demand less.
And on top of that, stock prices fell by a significant amount and housing prices fell, obviously.
And that led to a round of um, and it can see this consumption also fell.
Now this is the trend.
So if we do trend it, this is actually a pretty big drop of consumption at that point.
Now let's talk about the banking side.
So, um, the, the other part of this is that.
When the consumers defaulted on the banks.
The bank sees their property, right?
But guess what?
The banks also took a loss.
Why?
Because the property they seized, being 300,000 is less than the mortgage they provided.
Okay, so these, um, mortgaged, uh, mortgages or mortgage loans, um, became, uh, kind of many of them had huge amounts of risks.
Uh, and so banks, uh, lots of these mortgages having defaulted, also had saw a large contraction in their portfolio.
So now when assets.
So remember, the banks own these mortgages and these mortgages are assets on the bank side.
Now your assets are worthless compared to your liabilities.
What happens to these banks.
They can become insolvent.
Right.
So 400 banks in the US became insolvent uh, over this period.
Okay.
Took a few years, but over this period now there were other banks and and financial innovation was part of this whole thing as well.
They created lots of really fancy financial products with all kinds of mortgages, subprime mortgages, kind of packaged.
And these things, we're not going to go into details.
And they were sold off.
And Lehman Brothers, which was the bank that eventually failed and then started to, uh, you know, start off, um, a real big, uh, recession.
The US had held a lot of these property mortgages.
So at this point, when Lehman being a systemically important bank, we talked about this before because they are big

enough to impact lots of players.

Suddenly, at some point, they realised that Lehman had these problems with mortgages and, uh, subprime related stuff.

So what happens?

Well, there was a bank run, right?

But bank run, not in terms of retail investors like us lining up Lehman trying to get our money out actually didn't really take deposits.

It had an institutional bank run.

So lots of these institutions which previously lent to Lehman, remember that other banks borrowed, lend money to other banks and financial institutions lend it back.

They stopped lending to Lehman, feeling that they can they might not get their money back.

What happens?

You have a big bank and that fails when a big bank fails.

That can lead to lots of other financial institutions.

Um, a failing as well.

And there was at some point a risk on Bear Stearns, which was eventually got bought and lots of other really important banks until the government stepped in to stop that process because they said, we're going to provide as much liquidity as, as as needed.

So that kind of stemmed the banking crisis from spiralling up.

But anyway, to say that this caused, um, many bank failures and then the financial system froze and let me just end that once and this is the foreclosures.

Um, and let me just end that once the banks start to stop lending, right, because of these failures, that then again leads to a new round of multipliers on the economy because businesses couldn't borrow and they couldn't continue the business operations in the way that they expected.

So through the credit cycle, it further exacerbates the recession.

So something that happened from a shock, I don't want to call a small because it wasn't.

But from the housing price decline led to all these series of eventual deep recession, which took ten years for the economy to fully recover.

Okay.

See you next week.

That.