[SQUEAKING]

[RUSTLING]

[CLICKING]

RICARDO CABALLERO: Expectations play a huge role in economics. So what I want to today, not only in asset pricing-- I mean, asset pricing-- obviously, it's all about the future, really, but also in the kind of issues we have discussed throughout the course. And so that's what I want to do, essentially, is I want to give you a shortcut to think about the role of expectations in the kind of models we have already discussed. And so I'm going to do all that in the most basic model we have discussed, which is the IS-LM model. And I hope you'll get the gist of what expectations can do in economics.

So this is going to be a very compressed version, adapted version, of chapters 15 and 16. But in terms of material mapping into the book, those are the relevant chapters. And the main idea here is that the IS-LM model as we have described it up to now really overweights the present. And in practice, expectations about future conditions play a big role in the decision of all economic actors.

We'll look at investors, asset pricing and so on. But it's also true of consumers. It's also true of firms. I mean, if you think about firms, in investment decision, we made the function of the interest rate on our current output. But it's quite clear that the reason firms invest is not because of the current condition. It's because they anticipate making profits in the future. So it's all about real expectations.

And even governments and foreigners, when they invest, do foreign direct investment, they go and invest in a country, it's a lot about expectations of what the country will do in the future. I mean, political elections, for example, have huge impact on asset prices and so on precisely because they change what people think, for good or for bad, about future conditions. So expectations is just huge in economics.

So we want to do things in two steps. The first, I'm going to revisit the consumption function and the investment function, now taking into account expectations and motivate how you should really think about consumption and investment in a more realistic model than we have been discussing. And then I want to embed not the fully fleshed out consumption and investment decisions, but the flavor of the role of the future into the IS-LM model. And by then, you would have seen-- you will have seen all that I wanted to communicate, at least, in this set of lectures.

So let's think about, first, consumption. And up to now, we assume that consumption depended only on disposable income, on current disposable income. But that's not really the way it works. And one of the first in formulating, more or less, formally how consumption decisions are really made is Milton Friedman.

And he called it the permanent income theory of consumption, meaning what really matters to you in a consumption decision is not so much your current income, but it's what you expect to get on average during your lifetime. And you don't want to be moving consumption up and down like crazy. Once you realize, more or less, what you'll get on average, then you should-- consumption should be related to that concept.

And in a sense, it's also by thinking in these terms, you're also drawing a big distinction between things that are temporary and that shouldn't matter a lot for your consumption decisions versus things that are permanent, that clearly have a potential to have a much larger impact on your consumption. Of course, you can have temporary things that are very large. I mean, you win the lottery, that's a huge temporary shock. But probably you're not going to spend the whole lottery right away. You're going to smooth it over your lifetime, in any event.

And that actually relates to, more or less at the same time, Milton Friedman was at Chicago, Franco Modigliani at MIT. We will develop a life-cycle theory of consumption, which says, look, even at the level of an individual, the day-to-day income is not really what pins down the level of consumption, because people know early in life that they have a lower income than they will have later on. So they will tend to spend and borrow more when they're young. Then, in the middle, when they're in the middle of their life cycle, before retirement, they panic, and you tend to save more.

So you don't consume all you have because you know there are many years ahead of you where income will be lower than your consumption needs. So there is also a sense of intertemporal smoothing of your consumption. You don't follow income second by second. You sort of try to stabilize consumption over time, more or less. And that means that you have to think more about your permanent income, what you'll get on average, rather than what you get in the short run.

So when you start thinking about consumption in those terms, what really think, well, what really matters, then, is total wealth more than income. How wealthy you are will pin down more or less the consumption you have more than your current income. And there are two senses of wealth. One is financial wealth, all the assets you may have, you may expect to inherit or whatever, minus the debts you have.

So very much as we discussed in the previous lecture in the context of asset pricing, the expected present discounted value of the cash flows of all the assets you have, that's your financial wealth. And that's important. You have more financial wealth, even if you have no income today, you will probably borrow against that wealth to the extent that you can. And probably the banks will be more willing to lend to you if they know that you have a lot of wealth. And so you're going to fund the consumption, which is above your current income just because you have more financial wealth.

In fact, the very rich seldom sell assets. They borrow against those assets to fund consumption. That's the way it works. There are tax advantages of doing that and so on. But that's the way it works.

And the very rich often have no income, [CHUCKLES] at least labor income. All the income comes from returns on assets. And again, they mostly borrow against that. But in any event, the point there is that what really brings out your consumption is your wealth, not the current flow of income.

And the other very important concept, which is a bigger thing for most individuals, is human wealth. I mean, this is huge for all of you here. It's obvious that your current income is a lot lower than what your income will be in the future. You have a lot of human capital. And so that's also a concept of expected present discounted value is you expect to earn a lot of income in the future. And therefore, it makes sense that, at this stage of your life, you borrow.

Now, banks are a little bit more reluctant of lending you against your human capital than lending you against your financial assets. It's easier to borrow against a house than against your future income. But even there, probably you're going to have sort of-- not going to be saving a lot at this time of your life because your income is a lot higher in the future. That we call human wealth.

And total wealth is just a sum of financial wealth plus human wealth. So at its most basic level-- and those are-- sorry, just to relate to things we did in the previous two lectures, those are two expected present discounted value. You don't know exactly how much income you're going to get. You get a sense of, more or less, what somebody like you does in the future, more or less on average and so on.

So you have a sense-- you have an expected cash flow, labor income flow in the future. You don't know what the interest rates are exactly. So you're going to guess, more or less, what the future interest rate is. And that gives you a sense of human wealth.

And I know that many of these things you are not calculating every night, what your human wealth is, and then calculating-- consumes 5% of that or 3.5% of that. But you know, there are a lot of-- this is very behavioral. It's really ingrained in you.

And you're probably more likely to spend more if you think that you're going to be doing well in the future than not. Maybe you're too busy now to spend a lot. But at some point, [CHUCKLES] when you're given the opportunity, that will make a difference.

Traders, very successful traders-- they get a very low income. So essentially, they live out of the income that they get, they couldn't afford what they normally afford. But they spent a lot more than that income because they expect to get a big bonus and things like that. That's the income that comes in the future.

So in principle, your consumption should be something that is not proportional to your disposable income, but really proportional to your wealth. And there are estimates of what that proportionality factor is. And that's what I said, it depends on the type of assets we're talking about. But it's about 0.03, that kind of thing, OK?

Now, in reality, that's just-- it's true this is a better economic concept than just putting income in there. But in reality, both things really matter. So a more realistic consumption function is something that depends on both things-- for a variety of reasons, that many people have no savings.

And really, we call them hand-to-mouth. They live by the income they receive in every single period. Those people are not thinking about smoothing consumption over time. They're consuming whatever income they receive.

As I said before, most banks are not likely to lend you a lot against your expected present discounted value of labor income. So you may be constrained in the short run. Your income-- you think about how wealthy you'll be, but you also think about your flows, the cash flow you're receiving. That's also part of your considerations. So in reality, it's a mixture of those two things.

When you look at the micro level at different individuals, the composition changes. The richer you are, the more this term matters, the less this one matters. The poorer you are, this term overwhelms that term. That's, more or less, how it works. But on average, it looks like that.

So we weren't wrong when we did IS-LM, having the consumption function as increasing in disposable income. But I always told you there is a lot of interesting stuff hidden in that little C0, in the-- in that autonomous component of consumption. Well, that-- lots of interesting things has a lot to do with wealth, OK?

And again, this term here is something that captures a lot of things that are permanent. Well, this one captures a lot of cyclical components and things of that kind. So interpreted this way, the reason-- people during booms, even though human wealth may not change much over time, financial wealth typically changes in a boom.

But it's also the case, in a boom, wages are high. A lot of people tend to spend more. Even so, this captures a lot the temporary component. When you're in a boom, it's likely that you're going to consume more for any given level of wealth, OK? It's temporary, but that's what it is.

What about investment? That's a decision by the firm. How much physical capital? I'm talking about physical investment, real investment, not financial investment. The decision also depend on current, but particularly on expected profits.

And when you think about expected profits, you need to think about interest rate as well. We put the interest rate, as I said, OK, it's more expensive to borrow if the interest rate is high. True, but actually it matters a lot more than just that because it matters also through the expected present discounted value of your future cash flows.

If the interest rates are very high, and they're expected to remain very high, that means a project that gives you lots of return in the future, lots of cash flow in the future, may not be worth a lot simply because interest rates are very high. So the discounting of the future cash flows is very high. And in that environment, investments that give you a return, a quick return, are worth more than things that have a pay-off in the very long run.

So the decision, for example, of buying a machine needs to look at the price of the machine right now and then at the expected present discounted value of the cash flows, OK? So let's think a bit more carefully about that decision. So suppose you buy a machine for a price. Let's normalize that price to 1.

The first thing you need to know is, well, how long will this machine last because I need to know for how many years I'm going to get a cash flow out of these things. And a reasonable assumption is, for most machines, is some sort of geometric depreciation-- so meaning, it's not deterministic. It's more or less-- machines break down occasionally, but there is certain probability that they break down.

We typically call that notation in economics-- we refer to that as delta. That's the depreciation probability. So if you think in terms of expected value, if you buy a machine today, and you ask, how much of a machine I'll have next year, well, it's going to be a weighted average of 0 and 1 probably. But on average, it's going to be 1 minus delta.

So as a machine depreciates, the probability of the machine breaking down over a year is 5%, then 1 minus delta is 0.95, say. What is the probability that the machine is still producing two years from now? Well, 1 minus delta squared and so on and so forth.

So that's the first thing you know. I have this machine, and it's likely to give me cash flows over this many years and so on. And then I have to know how much expected profits I expect to get in each of those years. And then I need also to know what are the interest rates that are likely to prevail during the lifetime of the machine and so on. So at the end of the day, when I calculate, I do my little project, and I need to decide whether 1, which was the price of the machine or not, is too expensive or too cheap, I need to compare it with the expected present discounted value that I have for that machine.

So here is an example. This is a machine that gives-- the first expected cash flow comes next year. I set it up today, and I generate profits by the end of the year or at the beginning of the next year. That's expected profits for the first year of the machine, which comes at the end of the first year, discounted by an interest rate that I know today. I know the interest rate for one year.

What about the cash flow that I expect for two years from now? Well, that's going to be-- that's expected cash flow. If the machine is working properly, that's the probability that the machine lasts to the second year.

Or you can also assume that the machine sort of breaks down in little pieces every year. You get 0.95 of the machine in second year, 1 minus 1.05 squared two years from now and so on and so forth. But I also now, when I think about the cash flow in the second year, and I don't know the interest rate for the second year, so I need to have an expected interest rate here-- and so on, so forth, OK? If the machine lasts for many, many years, that's what I get.

A question, by the way-- I'm saying, yeah, I need to have expectations here and so on. But the truth is that the guy that invests in the machine doesn't need to have that expectation because I could replace this for something that is known today. What would that be?

I'm saying, when I calculate the expected cash flow, when I'm discounting the two-years-out cash flow, I'm going to have an interest rate that I know, the one from time 0 to the end of the first year. But I don't know the interest rate that prevails from the end of year one to the end of year two. That's what I wrote here. But I said, hm, but there is something in the market that I could look at and that I really know. What is that?

AUDIENCE: Is it the [INAUDIBLE]

RICARDO CABALLERO: Exactly. I could use 1 plus r2. These are one-year rates. R2t squared. So when you have the term structure, when you see all the interest rates, a firm deciding whether to invest or not has the interest rate it needs. It doesn't need to have expectations, form expectations about the interest rate. The market is doing it for them.

Now, the guy may choose to be a trader and decide that it doesn't like the interest rate that the market is pricing in. But that's a different trade. It's not the investment decision of the firm. The firm will have to make a forecast about expected cash flows and so on, but that's it, from the machine and so on, OK?

So obviously, the larger this is, the more you're going to invest, the more machines you're going to buy and so on OK? So in principle, a better investment function-- remember, we wrote an investment function as investment, a function of output, current output, which we said is a proxy for sales, and then the interest rate. Well, a better concept is that one, which does depend on aggregate activity. It depends on many things, but not only today's, also the ones that you expect for the future, OK?

And it depends on the interest rate, not only today's interest rate, though, also in the interest rate of the future. If I look at this expression, even if the interest rate today doesn't change, but I expect the interest rate to change in the future, to go up, that will lower the value of my project. We had no space for that when we posted the initial investment function. But here we have that.

And sorry, and this is an increasing function of that. The higher is V, the higher is the expected present discounted value of buying a machine given the price, the larger is the investment. Now, this is in principle. In practice, current cash flows also matter a lot, OK?

So in the same sense as in the case of the consumption function, we said, in principle, it's only wealth that matters. But in practice, there's lots of consumers that are financially constrained, they're hand-to-mouth and so on. So current income also matters.

But for firms, the same is true because-- and the main reason for that, really, is financial frictions, in the case of the firm because a firm may arrive with a great project to a bank, but the bank may decide that it doesn't trust as much or is not as optimistic as the firm is and so on. So it may not borrow-- the firm may not be able to borrow as much as it would want given how optimistic that particular firm is on its own project. The bank may say, you know, I'm going to be more conservative here since I'm lending you the money.

And one way that firms use, actually, to get around financial constraints is simply by returning-- retaining their earnings, meaning they generate a cash flow, and they save. Firms save a lot, by the way. Companies like Apple and so on save an enormous amount in huge deposits, US treasuries, and so on and so forth.

In the case of Apple, it's not to relax financial constraints, although it has something to do with. Being opportunistic, having the opportunity to buy things that are in distress. But many firms, especially smaller firms, have deposits and cash flow and so on mostly because, if they get a good opportunity, they may face financial constraints. So if current activity is high, sales are high, firms are going to be less likely to be financially constrained. And that's the reason current profits also end.

Now, current profit is going to be an increasing function of output over capital that-- for any given level of capital, if output goes up, that's going to generate more profit. And so we can write our investment function a little bit like we had in the earlier lectures. But now we put Vt here, Yt, and the interest rate and-- interest and then future output and future interest rates enter all through this term here.

And again, investment here is increasing with respect to Vt, and it's increasing with respect to Yt. So that's a far more realistic model. So you go back to IS-LM and put this type of consumption function and investment functions, and they're going to make a lot of sense.

Again, the concept of something persistent-- persistent things should matter a lot more than temporary things. OK? So naturally, if you expect profits to remain high for a very long period of time, that machine is going to be worth a lot more than if you only expect the machine to be very profitable for only one year. And so anything that is likely to be persistent is also likely to have a much larger impact. There are important exceptions, but I'm not going to get into that now.

And the same is true for interest rates. If I expect-- since interest rates are high today, but we expect them to go down in the near future, then that's not going to affect a lot the discounting of future profits. But if interest rates go up today, and I expect them to remain high for a long time, that's going to affect a lot more the present value of profits. And therefore, it's going to depress investment a lot more.

In fact, central banks, much more than playing with the current interest rate, they play with your minds. That's what they do. They are always telling you stories for why interest rates will remain high, for why-- [CHUCKLES] they don't want-- they want-- they only control an interest rate that is an overnight interest rate, really. But they-- and with that, nobody cares about the overnight rate except for some traders out there.

But since they want to influence aggregate demand-- that is, they want to influence consumption and investment-- they need to convince you that this stuff will last for some time, because otherwise it would be irrelevant because if you want to reduce aggregate demand, you want to convince firms and households and so on that the interest rate will remain high for a while. Otherwise, you're going to get very little effect out of that.

One of the problems they're having now, actually, when the Fed is trying to cool the economy, is that they keep hiking rates, but the loan rates have begun to decline already. And that's a problem for them. [CHUCKLES] They would like you not to believe, bankers not to believe that will happen. And that's a big issue.

So let's think about this IS-LM with expectations. So what we said is, what really we're after-- in the IS-LM model, remember, the IS-LM model is a model in which aggregate demand determines output. And that's what happens in the short run.

And the biggest components of aggregate demand, aside from the government, which is something that moves, more or less-- OK, with different behavioral functions. We're not talking a lot about that here. But the big drivers are consumption and investment. Those are at least the private sector drivers of aggregate demand, consumption and investment.

And what we have said now is that human wealth is affected not only by current income, but future after labor income, future real interest rate. That affects human wealth. That affects consumption.

Future real dividends plus future real interest rate affect the value of stocks. That's very important in financial wealth. Future nominal interest rate affect the price of bonds. So all these rates enter here, the price of nominal bonds.

For firms, future after tax profits affect expected present value. Future real interest rate affect also the suspected present value. So there is a lot that says future in this column here that enters into the consumption and investment decisions that we care about. That's what I showed you in the previous slides.

So remember the basic IS-LM model. We wrote it this way. Output was determined by aggregate demand. And closed economy-- forget all that, fully sticky prices. And we wrote consumption as these functions. So aggregate demand was increasing in output and government expenditure, decreasing in taxes, and decreasing on the interest rate.

So a shortcut-- so what I want to do now is give you a shortcut to integrate these views of expectations or the concept of expectations into this very basic IS-LM model, OK? So think of now of aggregate demand rather than just being a function of current variables, be also a function of the same variables, but in the future. OK? So aggregate demand is a function, as before, of current output, current taxes, current interest rate, current expenditure, but also function-- and with the same signs-- of future output.

So it's increasing in expected future output. It's decreasing in expected future taxes. It's decreasing in expected future interest rate. It's increasing in expected future government expenditure, although I'm not going to play with this here because of something very specific that I'll discuss later on. So that's the shortcut, OK?

The LM is going to be the same as before. So what I want you to think about now is a model that is like the one you had before with the same LM but now the IS is a little bit richer. It has more parameters-- these are parameters-- because I'm going to determine today's output, but it's going to be a function of more parameters. And all these parameters are essentially the same variables that we worry about today, but are the variables we expect of those-- are the values of respect for those variables in the future and, again, with the same sign.

So if output-- so if taxes go up today, aggregate demand will decline, and output will decline. But if I expect future taxes to go up as well, then that's going to depress aggregate demand even more. That's the type of logic I want you to develop.

So that's the way our model will look. So this is the IS in the same space I had before-- interest rate and output, current output. I'm trying to determine current output. But now I have lots of parameters that I didn't have before. I have a-- things that shift to the left. If taxes go up today, this IS will shift to the left.

Do you think it will shift to the left more or less than it did in lecture 3 or 4? So suppose we increase taxes by 10%. Will that reduce output more or less than when we had the static IS-LM model? Yeah?

AUDIENCE: Depends on the expectation.

RICARDO CABALLERO: OK, but I haven't moved. These are parameters from my curve. So I don't get the right to move them.

AUDIENCE: [INAUDIBLE] less.

RICARDO CABALLERO: Less, no? Less because now we said it's not only the present that matter. It's a combination of the present and the future. So if-- that means that anything that is just the present will matter less than in the past. Otherwise, you see that?

Suppose we had a two-period model, and I give equal weight to the present and the future. Then I'm going to cut the effect of the present in half. That's-- I'm exaggerating there, but that's, more or less, the logic.

So you correctly said, well, it depends on whether I expect the future taxes to change or not. Fine. That tells you there is a difference between changing temporarily the taxes and increasing taxes permanently. Permanently here means for the two periods.

So what happens with this curve-- so we decided that increasing taxes reduces this IS to the left by a smaller amount than in the past. What happens if you expect taxes to increase in the future? Which wealth goes down?

Human wealth, in particular. Your human wealth will go down because you expect your disposable income to be taxed more in the future. So that will also shift IS to the left. And that's the reason that if you have a permanent-- expected permanent increase in taxes today and next year, then that gets us back to the type of shift in the IS that we had when we had the static model.

It's the sum of the two. It's a permanent. So permanent changes will behave very similarly to the way the static model worked if they're permanent, OK? In a sense, that model was a very good summary permanent changes-- permanent changes in taxes, permanent changes in interest rates and so on.

Changing government expenditure, same idea-- it will also move aggregate demand to the right. But will it do it by more or less? Well, think how government expenditure worked in the basic model, in the static model. It increased aggregate demand, and that then led to a multiplier. And we got a lot more income and so on.

Now, if we expect this government expenditure it to be temporary, that multiplier also will be a lot smaller because, yes, it will increase income, but people are not going to spend all their income today. That depends on whether they expect future income to also go up as well or not. And that's a reason that it's-- again, if you expect this government expenditure to go up permanently, and nothing else changes, [CHUCKLES] then you can expect income to go up in the future as well. And then you get more or less the same effect.

Now, that's a tricky experiment because if you-- and it's very relevant for today. If this government expenditure goes up permanently, it's unlikely that the central bank will remain unmoved. And so you also have to start thinking, well, what will the central bank do? And that takes me to this variable here-- this variable here.

Well, before I discuss this variable, actually, let me point out that it's not accidental that I made this curve a lot steeper than it used to look. I mean, this looks like a pretty steep IS curve, which is a way of saying that a given change in interest rate now has a very small effect on current output, OK? Much smaller than we had in the static model.

And the reason is, again, this is permanent versus transitory. If you spec the interest rate to decline only for today, and that's it, that's not going to have a very large effect on consumption. It's not going to have a very large effect on investment. For the interest rate decline to have a very lasting effect, a very large impact on consumption and investment, it has to affect the expected present discounted values in a meaningful way. And for that, you want those changes to be more or less permanent, persistent, that private agents think that this change in the interest rate will be significant.

So if the-- so it's good to separate the two things. So if the Fed cuts the interest rate but doesn't persuade anyone that this rate will remain low in the future, then it is going to get very small effect on output. However, if we convince people that there will be future changes, that the rates will remain lower for a long time, that means that this IS now will shift to the right, OK? That's what we have here.

So you have distinguish which is a movement-- when the Fed cuts the interest rate, you get a small movement along the curve. But if the Fed persuades you that this is a long-lasting cut in interest rate, then the IS shifts to the right. And you recover the power of monetary policy.

Monetary policy depends a lot on its ability to convince people that things will remain in the direction that they want. If they fail-- there was a famous episode in US monetary policy during the times of Alan Greenspan. Alan Greenspan is known as one of the biggest central bankers that the US has, at least in recent memory. And he went through a period which was called-- was known as the Greenspan conundrum.

That is, the economy was overheating. He kept hiking interest rates. But the loan rates kept coming down. So he couldn't cool off the economy. [CHUCKLES] There was no way around that because they couldn't persuade the markets that this would be a long-lasting effect.

The reason was a different one. It was not that he couldn't persuade the market. It happens that, at the same time, you had China sending massive capital flows to the US. And so-- but the point is that the Fed had couldn't move the interest rates in the long run, and so it was very ineffective in terms of its monetary policy. So again, expectations mattered quite a bit.

So let's think about our-- well, this is what I was just discussing. So monetary policy-- I should have-- this-- so you're not going to do a lot unless you persuade people that interest rate will remain low for quite some time. And notice that there is here this-- everything comes into line because if the Fed convinced that the interest rate will be lower in the future as well, then you get the IS to shift to the right. But if interest rates will be low in the future, that means output will be high in the future as well, which further shifts IS to the right.

If you convince the markets that-- and the markets and consumers, households, and so on-- that you're cutting interest rates and that, with that, you'll be successful in creating a-- getting out of a recession, for example, in the future, that also increases human wealth, expected present constant value of cash flows, of profits, and so on and so forth because you are giving sort of better economic conditions in the future. So again, for central banks, it's a lot like-- it's mostly about expectations management. That's the business of a central bank, really.

I don't know how many of you are soccer fans, but there was a famous story of Mervyn King. Mervyn King was also one of the biggest central bankers that the UK has had, fairly recent. And he described-- he's British. It's "Lord" nowadays. And he described good monetary policy very much like Maradona's goal scored against the UK, England, in some World Cup. I don't remember which one.

And it's essentially Maradona picked the ball in his side of the field. And he essentially drew in a straight line to the goal and scored. But he persuaded everyone around to move away from his path, and that was a successful strategy. And central banks do a lot of that-- lots of talking. [MUTTERS] And, you know, at the end of the day, the true actions of moving the interest rate are the least important part of, really, a monetary policy strategy.

Fiscal policy can be quite tricky here, actually. So we know that the fiscal contraction, a reduction in government expenditure-- if you just think about the basic IS-LM model, what happens? Well, it's a fiscal contraction. You reduce government expenditure, that will certainly reduce output. All the IS-LM, you reduce government expenditure, you shift IS to the left. And that reduces output.

When you have expectations, things are a little trickier because it depends a lot of what you expect the central bank to do in the future. And it expects a lot on what the private sector-- how the private sector responds to that. So, for example, if you have a fiscal contraction that leads to an anticipation of a big cut in interest rates in the future, that may be expansionary. It can offset quite a bit of the fiscal contraction side.

And in fact, most of the time when you have episodes of fiscal consolidation in environments that are not of very high distress, financial crisis, and so on, it typically sort of-- how successful that is depends a lot on whether people expect to be a sort of implicit deal between the central bank and the Treasury. If people expect that that fiscal contraction will come with much looser monetary policy conditions, then the fiscal contraction is not as contractionary as could be otherwise.

And if, for some reason, the fiscal deficit, the perception of fiscal deficit, was really dragging the economy down because people didn't know when there could be a financial crisis in the near future and so on, then you can get a situation in which the contraction, fiscal contraction today, improves the perception of stability of the country in the future, which in turn may increase expected future income and be expansionary. So most of the fiscal contractions are contractionary. But there are some famous episodes of what are called expansionary fiscal contractions.

One of the most classic cases, best-known cases, is Ireland in the late '80s. Ireland had massive fiscal deficit. And all they talked about was fiscal deficits because they had very large fiscal deficits relative to GDP. And the economy was really sort of stagnating and going through cycles and so on. And it was all around this fiscal deficit and so on.

So towards the late '80s, they began a delivery plan of fiscal consolidation. Fiscal consolidation means, essentially, reducing the deficit. And they were very successful, as you can see. But contrary to expectations, at least, output growth did not decline, actually. They finally sort of-- they had a very good period like that. So that's all-- it was all about expectations.

Notice that unemployment, though, did go up. So despite the fact that you got more unemployment and so on, output began to grow because firms began to invest more, consumers became more optimistic. In fact, you see the house household savings rate declined dramatically. It is all-- consumption and investment did that-- consumption, investment.

People consume more, invest more because sort of everything looks a lot better. They have been struggling with this for very long. And they finally-- they had gotten that behind them.

Now, this example is abused by almost anyone that wants to cut taxes and things like that. But-- sorry, by almost anyone that wants to cut fiscal expenditure. But there are experiences. There is a whole spectrum of experiences. But in situations that are as extreme as this one, it clearly proved to be very effective.

So that's that. So let me take a stock. So the role of this lecture was to say something that I sort of should have said earlier on, but I would have been a bit confusing. So I decided not to talk too much about it. But it's very important. Expectations plays play a central role in economics.

In particular, expectations influence aggregate demand. And for us, this course was a lot about aggregate demand. Except for the part on growth, it was a lot about aggregate demand.

Now, we did talk about expectations. But we did talk about expectations mostly in the context of aggregate supply. Remember, when we talk about the Phillips curve, we did have expectations because wage setting was a function of expected prices and so on and so forth.

So we did talk about the role of expectations in aggregate supply very quickly. But I think a much bigger role is played-- of expectation is really on aggregate demand, and certainly on asset prices. But aggregate demand asset prices are connected because asset price is about wealth and the value of future cash flows, which are, more or less, the same drivers as for investment and consumption.

And finally, I want to say that, many times when you find episodes of fiscal, even sometimes monetary policy that are counterintuitive, it's entirely due to the expectations part. So this is case of fiscal consideration is not that the cutting in fiscal expenditure was expansionary. That was not. That was contractionary. But it was overwhelmed or offset, more than offset by the improvement in the outlook that you had.

And that also happens with monetary policy. Countries that have high inflation problems and so on sometimes get-- and they have to go through dramatic tightenings and so on. Yes, most of them get very short-lived recession. But sometimes they are very short-lived recessions because eventually the reduction of the instability caused by high and unstable inflation sort of ends up dominating any direct contractionary effect of monetary policy.