[SQUEAKING]

[RUSTLING]

[CLICKING]

PROFESSOR: So we're going to continue with our discussion of chapter 22. Remember, we're talking about-- this part of the course, we're talking about behavioral responses of taxation. And we talked in chapter 21 about how labor supply responds to taxation. And then we started chapter 22 discussing how savings response to taxation. And we talked about the canonical intertemporal choice model where people have two periods, working life and retirement. And they decide how to allocate their savings across them.

Then we turn-- we mentioned that that's not the only model of savings. And in fact, there's a lot of evidence for alternative models, such as behavioral motivations for savings and precautionary motivations for savings. We then talked about how inflation affects the tax rate. And now I want to come to the main application of this chapter, which is tax incentives for retirement savings. There's a general feeling in the US that we don't save enough.

If you go back to your basic macro, your basic macro growth models, one of the key determinants of growth is capital. And what drives capital is savings. And a general feeling is that we as a nation are not achieving our potential because our savings rate is too low. And one way the government addresses that is through offering subsidies to saving for retirement, to making sure that besides Social Security-- remember Social Security, if anything, lowers savings. It crowds out savings. The idea is, how we get people to save on their own for their retirement?

And we do so through four different tools, OK? The first is employer pensions. Pensions are plans your employer provides where essentially they put aside some money, and it becomes-- it's you can then access that when you retire. There's two kinds, actually, of pensions. One kind, the kind is-- the traditional pension is actually defined benefit pension. That is a Social Security-- it's an unfunded-- unfunded Social Security-like system, where the benefit you get is unrelated to what you put in. The benefit you get is a function of your earnings, and how long you've been at the firm, and your age. But it's not a function of how much you actually put in. So that's unfunded.

Now, government laws, unlike Social Security, where it's a true Ponzi scheme, government laws that dictate firms are supposed to be putting aside money to pay that when it's due, although some firms don't sufficiently fund it. So it's not really unfunded. But the key thing is it's defined-- it's let's call it federal quasi-funded. In theory, it's funded in practice. Some firms don't do it.

But the main thing is the benefit is not a function of what you saved. It's a function of things like what you earned. Those are going away. There's not many of those left. The main way pensions work today is what's called defined contribution pensions. That's literally your employer says there's money being put aside periodically for you that's going to an account. You can see the account, and you see how it grows. OK?

And that's one kind of pension. And most importantly, the money that your employer puts in these accounts, in these defined contribution accounts, is non-taxable income. So just like when your employer spends on health insurance, you're not taxed on that income. When your employer contributes to your DC account, that is non-taxable income. Now, when you retire and take the money out of the account, you are then taxed on it.

So it's not that it avoids taxes. It delays taxes. And we'll come back to this. Very important. Yeah?

AUDIENCE: Is that the 401k?

PROFESSOR: I'm going to get there. It's not. It's different and critical-- critical concept. I'm going to get there in one second. So this is-- everyone talks about 401k's. But in fact, this is still an important part of the pension landscape. Some employers, like MIT, I've got a 401k and I've got a DC plan. So these are still-- these are important plans. And they're tax subsidized, not tax avoidant. They're tax subsidized because you do pay taxes. But you don't pay until you actually retire and get the money.

That's as opposed to 401k's. A 401k is also-- that's the section of the tax code that authorizes it. That is also a defined contribution plan. And the difference is you decide how much to put in and what's done with the money. With the DC plan, your employer says, you work at MIT. We're contributing 3% earnings to this account, and we're investing it.

With a 401k plan, they say you're now eligible for a 401k plan. You can decide how much of your earnings to set aside and where to invest it in this government-- in this employer-sponsored tool. [INAUDIBLE] a traditional defined contribution to 401k is who makes the decisions and who controls the money.

Now, with a 401k, there's a limit. You can only contribute up to about $20,000 into a 401k. And sometimes firms will match those contributions. Sometimes firms will say for the first several thousand, for example, for every dollar you put in, we'll put a dollar in. But the bottom line is that-- the bottom line is that it's a defined contribution plan where you decide how much to contribute and you decide how it's invested. And sometimes employers might match it. OK?

Now, apart from that, there are also what's called individual retirement accounts. Not the Irish Republican Army, but the individual retirement accounts, which are recognizing the fact that the majority of workers in America do not have a 401k in their job. OK? You're all trained. You all know that term. I mean, it's amazing how well the-- it's probably the best known section of the tax code.

But in fact, most jobs don't provide a 401k or a pension. So as a result, if your job does not offer that, you can take advantage of what's called an individual retirement account, which is literally the same thing as a 401k, but you literally-- it's not your employer doing it. It's you doing it. Yeah?

AUDIENCE: For the employers that [INAUDIBLE] 401k, what incentivizes them to match the--

PROFESSOR: Oh, great question. Actually, it's a sub-provision of this section of the tax law, which states that if your 401k does not sufficiently represent your whole workforce, you lose the tax benefit. So basically, the concern is only the rich-- if only your rich employees take the 401k, then it doesn't get the tax benefit. It's got to be that all employees-- that a broad cross-section of employees take advantage of it.

So the match rate, which employers pitch as them being nice, is them making sure that low-income people actually take advantage-- lower-- that it's not just the executives that take advantage of the 401k, but everyone does. It's a way of bribing people to get in so they don't run afoul of the discrimination provision. Yeah?

AUDIENCE: It sounds like the tax benefits are not noticeably different between the 401k and the IRA.

PROFESSOR: Well, no. I haven't gotten IRA yet. I haven't talked about the IRA yet. The tax benefits between the 401k and the DC, you mean?

AUDIENCE: Yeah.

PROFESSOR: OK, I haven't talked-- OK. I haven't talked about the IRA yet. Yeah?

AUDIENCE: What incentivizes the companies to manage your money well in DC?

PROFESSOR: In the DC plan? Well, I mean basically-- I mean, nothing except there is they have fiduciary responsibility. So legally they can be sued if they don't. And so I think it's more just kind of that they have a responsibility to do.

AUDIENCE: So which performs better, 401k-- like maybe on average? Like a DC, they would invest [INAUDIBLE] one smarter or less smart?

PROFESSOR: That's a great question. And there's huge variation between-- obviously, 401k's are more risky. People generally take more risks than firms do. People are not as necessarily thoughtful about how they invest their own money as-- we talked about with Social Security privatization, that people might-- but I'm not sure what the average rate of return of a DC for a 401k is. Enoch?

AUDIENCE: I don't know if someone already asked this. But what incentivizes employers to match?

PROFESSOR: Oh, that was the question was just asked. It's basically so that you don't run afoul of nondiscrimination provisions by bribing your lower income employees to participate. OK. So what an IRA is it's an individual account. First of all, you're only eligible if you're lower-middle income. So if your income is below about $100,000, you can take advantage of the IRA.

Here's the key thing, is IRA-- first of all, you can contribute up to a certain amount, currently about $6,000. So you contribute up to $6,000 every year. What is an IRA? It's actually just a label for a savings account. Anything in the world can be an IRA. You can have a bank account that's an IRA. You can have gold that's an IRA. You can have stocks in an IRA. It's just a label you put on a particular form of savings. You say this chunk of money is my IRA.

Once you say that, any money in there is treated like a 401k in the sense that when you put it in, you can deduct it from your taxes if your income is below $100,000. You can deduct it from your taxes. And then when you take it back out, it's taxed. So once again, all these things have the feature that they're not taxed on the way in. They're taxed on the way out. OK?

You cannot take money out of your IRA or your 401k until you reach a certain age. It's 59 and 1/2. So these are retirement plans. You can't access the money till you're 59 and 1/2. And you have to start taking it out by age 70. So these are not designed to shield your bequest to your kids. So basically, 401k's and IRAs, the idea is basically we're going to let you defer taxation on these accounts. But you have to start taking them out.

And we're not letting you get them until 59 and 1/2. But you have to start taking out at age 70. There's actually an actuarial schedule that says-- it has what's called minimum distributions to make sure that you don't just leave it sitting in there until you die, to try to make you actually use it while you're still alive. OK? So that's how an IRA works now.

In fact, richer people can still use IRAs. You just don't get the tax deduction. Now, you might say, well, why the hell would you? I'll tell you why in a minute. Yeah?

AUDIENCE: [INAUDIBLE].

PROFESSOR: I mean, your kids get your IRA. Your kids get your IRA. But then-- so we inherit-- my wife inherited her mother's IRA. And now she has to spend it at the rate at which her mother would have had to spend it. So we inherit both her mother's IRA and her mother's schedule, which it has to be spent. Yeah?

AUDIENCE: [INAUDIBLE] actually use the money? I just took it out of the account?

PROFESSOR: Just take it out of the account. Do whatever. They don't track. You could put it into another account. You just have to take it out of that account. Good question. That's a very important question for later in the lecture. OK? So that's IRAs work.

Finally, the last thing we have is what's called a SEP IRA, which is for self-employed people. If you're self-employed, it's essentially like a 4-- it's essentially an IRA that you can pay into out of your self-employment earnings. The reason it's different is the limit here is $57,000 instead of $6,000. So if you're self-employed, you can put up to 25% of your earnings into essentially a 401-- it's essentially a 401k, but for a self-employed person. It's just not quite a four. It's called the SEP IRA. It's basically a way to set money aside if you're self-employed in a tax-preferred manner. Yeah?

AUDIENCE: Are the numbers of the SEP IRA is such that they are essentially equivalent to being a 401k?

PROFESSOR: It's basically 401k. It's basically 401k for self-employed people. OK, now here's the key point. With all these things, what I mentioned is you don't avoid taxation. You just delay taxation. So what's the point? What's the value? Well, the value comes from-- the value comes from-- oh, you guys. You missed table 22-2. OK. Or maybe you put it in the back. No, 23-1-- no, you just missed it.

OK, I'll write the table on the board. So the value comes from-- the tax advantage comes-- the value comes from the fact that, essentially, the present discounted value of money means that taxes paid later are more valuable than taxes paid earlier, or they cost you less than taxes paid earlier. So the key point is that-- there's an example in the book, but I'll just go through it.

The point is that if I earn money today, pay taxes on it and save it, then when I take it back out, I'm going to have less than if I earn money today, save it, and then pay taxes on it. Why is that? Well, that's because I earn the money on the amount that would have paid in taxes. I earn interest the amount that would have been paid in taxes.

So I earn $100 bucks today, keep $50 and save it. Then I get the interest on $50. If I keep all $100 and save it, I get the interest all $100. And then while I pay taxes, I get-- essentially, it's who gets to hold the money. If I pay my taxes today, the government gets the money today and gets to earn all the interest on that money forever. If I hold the money in my account, I get to earn the interest. And then I pay taxes later, which is a better deal

Indeed, the rough facts are if you have an individual retirement account and hold for 30 years with a 25% tax rate, then if you put the money in a regular bank account, an IRA account, you end up with twice as much in the IRA account-- twice as much. Why? Because you got to earn the interest on the taxes. The other guy got had to pay the whole time. So essentially, the intuition is you-- and that's what's called inside build-up.

And that's why, in fact, people will actually use nondeductible IRAs. Like I said, you can have an IRA if you're above $100,000 in income. You just don't get to deduct the initial payment. But you still to get all the-- all the tax you would have paid along the way, you still get to avoid till the end. And that ends up being the bigger part of the savings. So even though you don't get the initial deduction, every year when you earn interest, you don't pay tax on it that year. You pay tax at the end.

So you to get the interest on your taxes you would have paid on your interest. So it's a smaller amount, but it's still beneficial. And so that's why tax subsidies actually are valuable, even though you're just avoiding taxation. It's better to avoid taxation because then you get to earn the interest on the money rather than the government earning interest on the money. Yeah?

AUDIENCE: So once you get through-- as your wealth increases, you can no longer deduct what you contribute to your IRA. But you can still contribute to your IRA, is what you're saying?

PROFESSOR: Yes, contribute. And you get the tax break on the accumulated interest along the way. Rather than paying tax every single year, you pay at the end. So you get to hold the money and earn interest along the way. Does that make sense to folks? OK, so that's why this is a tax-- that's why delaying taxes-- taxes delayed are taxes avoided. Taxes delayed are taxes avoided because taxes paid in the future mean that you get to earn the interest along the way, rather than the government earning it along the way.

OK, so this brings us to one of my-- I don't know. It's hard to have a number in this day and age. One of my least favorite public servants, the former Senator from Delaware, William Roth. Now, why is William Roth one of my least favorite public servants? Because William Roth introduced what's called the Roth IRA.

Now, what is the Roth IRA? The Roth IRA is the opposite of IRA. What it is is you pay taxes now when you put the money away, but you don't pay taxes when you take it back out. Now, according to logic I just gave you, that would be kind of stupid. Why? I just said the whole advantage of these things is paying taxes in the future, not today. So why would someone find a Roth IRA attractive? Why would someone do that?

I'm sure you guys have thought about this. You guys, why would someone do that? Yeah?

AUDIENCE: If you think tax rates could go up.

PROFESSOR: If you think tax rates are going to go up, it's a way of betting against tax increase. Or if you think your tax rate's going to go up. So you're betting against that. So it's-- literally does not promote savings at all. It's just a way to rip off the government. It's just a way, if you think taxes are going to go up-- so if you have a regular IRA versus a Roth IRA, all you're doing is saying, well, I'm going to let you choose the one that allows you to bet in which way tax rates are going to go and lower savings that way. OK?

Why did we do this? We did this because of the CBO, who I praise generally. But here's the problem. The CBO scores revenues over-- has budget scoring over a 10-year period. When Roth was done, it was a five-year period. Now it's 10 years. Let's say I wanted to promote savings by introducing an IRA. How's that going to look? That's going to look like a big tax loss now, because I'm giving you a tax break and a tax increase in 30 years when you retire.

What about a Roth IRA? That looks like a big tax increase now and a tax loss 30 years from now. Well, if I'm balancing a 10-year budget, what do I care about? I care about now. So by introducing the Roth IRA, it was simply a shenanigan to give people tax breaks without looking like it was costing the government money. So what the Roth IRA did, was by saying, we're still letting people save for retirement by letting them pay the taxes up front. We're not actually saving the government money. We're actually costing the government money, if tax rates are going to go up. But it looks like, in the first 10 years, we're making money. OK?

Indeed, it's worse than that. OK? President Bush wanted to cut the tax rate on-- President Bush II, George W. Bush wanted to cut tax rates on income-- on capital income. I'll talk about that later today or next lecture. But he didn't have the money. So what he did is he boosted the incentives for Roth IRAs. When he boosted the incentives, people started putting more money into them, which meant more taxes now, less taxes later. And it looked like he'd created revenue.

So he paid for a tax cut with a tax cut. He paid for a tax cut today by getting people to put more money in Roth IRA today. So the reason I'm very upset about this, you can tell, is it's not materially adding value to the savings decision in America. It's just a shenanigan to leverage people to bet on which way tax rates are going to go and avoid the consequences of cutting taxes-- of these tax subsidies. So lecture over. But that's kind of why I'm not a fan of-- I mean, I have a Roth IRA. Sure. I mean, Karl Marx-- Karl Marx, when asked why he lived in a nice house, said, "When the proletariat takes over, I'll move."

[LAUGHTER]

But the bottom line is it's really-- it's not a very good deal for the government. Now, how do taxes-- how do the subsidized retirement accounts impact savings decisions? Well, let's go back to our standard intertemporal choice model. And let's go to figure 22-3.

Now, you remember in the original figure we had a budget constraint without taxes. And the slope was 1 minus R-- 1 plus R. Then we [INAUDIBLE] with taxes, and that's now the red budget-- the lower budget [INAUDIBLE] in this diagram, 1 plus R times 1 minus tau. That was the budget constraint with taxes. So let's say with taxes, you're at point A. OK? That's your after-tax decision.

Now, what is a retirement account doing? It is lowering your effective capital tax rate, but it's not taking it to 0. Remember, we're delaying taxes. We're not getting rid of them. So let's add a term, rho. What is rho? Or that's the p. What is rho? Rho is basically the percent by which your tax burden is lowered by delaying when you have to pay taxes. So rho is some number greater than 0 and less than 1. OK? Or some greater than 0, less-- greater than 0 and less than 1.

So basically if rho was 1, that would be just we're not taxing you. Then it would just cancel out. Then this new budget constraint would be the same as the original non-tax budget constraint. If rho's less than 1, it's raising the return to savings, but not as much as if we just got rid of taxation. People understand that? OK.

What did it do to saving decisions? Well, once again, we don't know. It depends on whether income or substitution effects dominate. If substitution effects dominate, we are raising the price of first period consumption. Assumption why are we raising the price of first period consumption? Because we're making savings more attractive by tax preferring it. We tax first savings. We raise the price of first consumption that leads to less first period consumption. That would be like point B.

On the other hand, we are making you richer because we are giving you a tax break. When you're rich, you consume more of everything, including first period consumption. So that forces you the other way. And then we're going to say we're going to increase first period consumption. Which one dominates depends on whether substitution income effects dominate. OK?

So it is uncertain whether tax subsidy retirement savings actually increase retirement savings or not. Now, general economics, we tend to think substitution effects dominate. That's kind of our pattern of being. So generally, the assumption would be, look, if you tax somebody's retirement savings, you'll get more of it. That seems kind of-- that doesn't seem so strange to say, even though it's theoretically not necessarily correct. It seems not crazy that you would assume that.

But you can't stop there. It's more complicated. Because all of the systems I've mentioned, 401k's, and IRAs, and SEP IRAs, all have a limit on how much you can put into your retirement account. And that makes the analysis one step more complicated. Let's go to figure 22-4, and let's consider an IRA with a $6,000 limit.

What that says is someone who currently saves nothing at point B, they get a higher rate of return to their savings with an IRA than without. The red button constraint's above the blue budget constraint. But once they've saved $6,000, there is no marginal change. They're back to 1 minus tau. So the slope of the budget constraint returns to the parallel line it was before-- parallel to the line it was before. Very important to understand this. This is tricky.

For the first $6,000 of savings, we've changed the slope. We've made the rate of return to savings higher. But once you're past $6,000, we haven't-- the slope returns to the old slope, but you are richer. You still have $6,000 more dollars. So it's just a parallel shift up to the budget constraint.

So up to point C super W2, it's a change in slope of the budget constraint. To the left of point CW2, it's just a parallel shift up by $6,000, just $6,000 richer. But there's nothing else that's changed. You just got $6,000 and you're not-- I'm sorry, you're not $6,000 richer. You're $6,000 times the slope of the budget constraint richer it's just shifted it up. OK, questions about that?

Well, let's think about what this does. And let's go to one of the more complicated graphs in the book, figure-- the next figure, figure 22-5. And we have two people here. We have the low saver and the high saver. We have the grasshopper and the ant. You guys know the old story of the grasshopper and the ant? The grasshopper is the low saver. The ant's the high savor.

The grasshopper is someone who wasn't saving much before this system got introduced. So let's say they were at point A. They were saving $1,000. They were saving $1,000. What happens to them? Well, they are like the previous graph. They're like the previous case of figure 22-3. There's an income effect and substitution effect. It's not clear which way it goes. They are the standard case. We've just changed the marginal rate of return to savings. That is, the income effect and substitution effect is unclear.

But what about the ant? The ant was already saving $7,000. What happens to their savings and why? Well, think about it in terms of working period consumption. What happens to their working period consumption and why? I mean, you see in the graph, what the answer is. But what's the intuition? By the way, the fact that the new intercept-- yeah, is that the kink is irrelevant. The point is that the new inter-- B is to the right of and A, and unambiguously to the right of A. And why? Why is B unambiguously to the right of A in the bottom figure? Well, it's just basic substitution and income effects, guys. What's going on?

For a person like the person in panel B, what's going on?

AUDIENCE: Well, I guess for the $6,000 that they're saving, they have lower consumption.

PROFESSOR: Well, for $6,000 they're saving, they got a tax break, which makes them richer, which has an income effect. Income effect, [? substitute ?] income effect. OK? An income effect. Income effect makes them richer, which makes them want more first period consumption. There's no substitution effect. The slope hasn't changed for them. They're on the parallel part of the budget constraint.

So it's unambiguous for the person who is already saving more than the kink that it lowers their savings. So think about this for a second. We've just put in this big tax break that has an ambiguous effect on some people, and an unambiguously negative effect on savings for another people. So it's actually pretty ambiguous that it's going to increase US savings, right? So think about it in terms of the marginal, inframarginal.

The inframarginal is we have taken this person. We've taken the ant and given them a bunch of money. The question is, are we getting more savings out of it? Well, from ant, we're certainly getting less. And the grasshopper is not clear. So the marginal effect could be zero or even negative. We might be spending a bunch of money and getting less savings. OK? Do people understand that? That is not at all obvious that putting in a tax break-- first of all, the tax break itself is not obvious [INAUDIBLE] substitution income effects. Then you had the cap, and that makes it even less obvious.

What's going on with the ant? What's actually happening here? What's happening here is since they were-- remember, what is an IRA? It's just a label on an account. So what Mr. Ant in the second graph is doing is saying, I already got $7,000 in my tax savings account. I'm just going to slap the label IRA on that. Simply slapping the label, I've made money. I was going to save it anyway, so I've made money by slapping label IRA. Because now I save it at a lower tax rate-- effectively lower tax rate. He's just reshuffled the money from non-IRA savings to IRA savings.

So the problem with capped savings incentives plans is for those above the cap, all they do is promote reshuffling of savings that we're going to do anyway into these new accounts. So in this standard intertemporal substitution model, it's highly ambiguous whether a capped retirement subsidy would actually increase savings or lower it. Questions about that? Yeah?

AUDIENCE: If he shuffles into IRA, but IRA returns more, wouldn't he have the same amount when he retires?

PROFESSOR: He'll have hell of more when he retires. He's richer. That's what caused the income effect. He's taking money out of an account that was earning, what, R times 1 minus tau. And he's moved to an account that's earning R times 1 minus tau minus P for the first $6,000. So his first $6,000 of savings is now taxed less. So he's richer. It's a good thing to do for him.

AUDIENCE: [INAUDIBLE] Richer, now, or he's richer in the future?

PROFESSOR: Well, no, he's lifetime richer. He's not richer now. He's lifetime richer. Lifetime richer. Yeah?

AUDIENCE: Look, I'm just a little confused. The income effect pushes one towards present consumption?

PROFESSOR: Yes.

AUDIENCE: Why is that?

PROFESSOR: Why is that? Because you're richer. When you're richer, you want more of everything.

AUDIENCE: But wouldn't you-- doesn't that also mean-- future consumption is also good when you want to consume more future [INAUDIBLE]?

PROFESSOR: Well, sure. You want more of both. But the point is that the way you can get-- remember-- just remember, if you go back one of the other graphs here, remember when we tax capital, that lowered-- regardless of what you did to your first period consumption, it lowered second period consumption. Likewise, when we subsidize capital, it raises secondary consumption, even if first period consumption rises. You don't rise it so much that it falls in the second period.

But the point is, I have now made you richer. You want more consumption in the first period and the second period. But remember, the only variable you care about is the first period. The second period drops out. And here's why. Because once you decide in the first period, that's going to feed through to the second period. And when you basically say, I'm rich, [INAUDIBLE] first period consumption, you're not going to take so much more you make yourself poorer in the second period.

You say, I've got money to split. So [INAUDIBLE] them spend that money by saving less, not saving so much less that by consumption actually falls in the second period. But I can have it both ways. I consume more in the first period and have more in the second period because I'm getting a benefit. Because essentially, the government is handing-- this guy at the bottom, the government is handing him a check for a few thousand dollars. OK?

What he's going to say is I'm going to take that check, spend $1,500 now, $1,500 later. His first period consumption's gone up and his second period consumption has gone up, but he's saving less.

AUDIENCE: Is there-- that leaves open the possibility of saving zero more though, right?

PROFESSOR: Yeah. Yeah, he could-- he's going to save-- this person's going to unambiguously save less. It could be-- the income effect could be zero. He could have no effect. But the bottom line is the way he raises, unless he doesn't care about first period consumption, he's going to consume more in the first period. So let's put it this way. The government has just handed me a check for $3,000.

AUDIENCE: [INAUDIBLE].

PROFESSOR: So let me finish. I was saving $7,000 already. The government just handed me a check for $3,000. Unless I don't care at all about today, I'm not just putting that away and have it be $10,000-- and have $3,000 more in the future and no more today. Say, great, I'm richer. I'll spend some today and some tomorrow. So by spending more today, my savings falls from $7,000 to $6,000. But I've got $3,000, so I'm still better off in both periods.

AUDIENCE: OK.

PROFESSOR: Yeah?

AUDIENCE: If your consumption is higher the first period, why do we care about having lower savings?

PROFESSOR: Well, why do we about lower savings? Because ultimately, what was the whole motivation? Was that we care about the capital stock. We talked last time. We care about the level of savings in the US. Why do we have this subsidy in the first place just to raise consumption? Why are we giving a tax break three times? Why don't we just give people checks? And we have a tax subsidy for retirement savings. That's the whole idea is we're trying to promote savings here.

Why are we doing it? If we're not promoting savings, why the hell are we doing this? We're spending a ton of money on this to give the guys checks. Think about it, once again, in terms of the inframarginal, marginal effect of a tax break. I'm giving away government tax revenues by giving you this tax break. If I'm not promoting savings, why the hell am I doing that? I got to ask. I mean, maybe I'm doing it because I like this way of giving people money. But you at least ought to evaluate these other things I could do with the government money. Does that make sense?

It's a good question. Keep asking questions. It's really hard. So if it's not clear. Keep asking. Yeah?

AUDIENCE: For the high-favor person, you're paying them for doing something that they are already doing?

PROFESSOR: Yes. That's the inframarginal effect.

AUDIENCE: And then they're richer off?

PROFESSOR: Then they're richer off. And because you're doing that, they're then saving less. So it's like a double whammy. You're paying them for something they're already doing. So it's cost your government revenue. And imagine-- think of it this way. Imagine everyone was like the second graph. Imagine we said, we're going to give a tax break, but only on the first $100. And everybody saved more than $100. Not true, but imagine they did.

Then we'd literally be saying we are giving a tax break to lower savings in America. So we would have a inframarginal effect, which is all the money we would have collected on the first $100, and a negative marginal effect, and a margin. So it literally would be a self-defeating tax break. We'd be paying money to accomplish less than nothing. Does that make sense? All right.

Now, now it gets more complicated. It gets more complicated because, I mentioned last time, this is not the only model of savings. Imagine a world where savings is done partly for this reason, but partly for precautionary reasons. Partly because you want to make sure you have money to save if your car breaks down or if you get sick.

I would argue-- I will argue that that actually causes IRAs to increase savings more. That offsets the negative effects we were just worried about. And why? If part of the reason people save is they have money for their car breaking down, why does that reduce the reshuffling I just talked about? Why does-- yeah?

AUDIENCE: Because of the [INAUDIBLE] retirement account, you can't take out money.

PROFESSOR: Exactly. Reshuffling means that you're indifferent. But if you have precautionary savings, you're not indifferent. Remember, my guy said he took his $7,000 account and slapped an IRA label on it? Well, that is not costless. When he does that, he can't take the money out until he's 59.5. So that's not a costless activity. In this simple model, it is a costless activity because people only save for retirement.

But the model where savings are for other reasons, then they may not want to simply reshuffle their money. And that is the reason why a raise might increase-- so that's the reason why the second panel might not be true, why they might not reshuffle all their money, they might only reshuffle some. So it could increase savings. Yeah?

AUDIENCE: Are there any exceptions to [? 59? ?]

PROFESSOR: Yeah. For IRA, there's not. For 401k, you can borrow against it. You can actually-- but it's at a high interest rate. Actually, and for both of them, you can take it out early. There's a 10% extra penalty. So there are exceptions. You can take it out early with a 10% penalty. Or for 401k, you can borrow against it. So if there's really dire circumstances, you get 10% penalty. But in some sense, that offsets a lot of the tax benefits due in the first place. So folks don't really want to do that OK?

So likewise, think about the behavioral model. Remember, I said the problem is people don't have self-control with their money. What's the best form of self-control? Having money in a retirement account you can't touch. That's another reason why retirement accounts might be valuable and people might increase savings if you offer them. So the point is, in the standard model, retirement accounts almost certainly don't increase savings, given that most people are actually above these limits in their city, most rich people are, most people who save. Well, it's not clear. It's ambiguous. But these other factors which make retirement accounts more attractive.

So what's the answer? Well, the answer was delivered to us in an outstanding study that was done by Raj Chetty at Harvard looking at a reform in-- which Scandinavian country was this? This was-- they have great data in Scandinavia. And that's why they do-- Denmark. So in Denmark, what happened was they had a change in the tax subsidy for savings. So look at figure 22-6. OK.

So basically the tax subsidy to savings fell dramatically for one group and not another group. So basically, in other words, there was an IRA that was more generous for one group and not another group, and they equalized them. So what that meant was you have a difference in difference setup to understand, what does that do to savings? What he found was there was a dramatic effect in terms of money and retirement accounts, that when you lowered the tax break for money in retirement accounts, there was less money in retirement accounts. And it was completely offset by savings elsewhere.

So all the less money retirement accounts just became more money elsewhere. Complete reshuffling, that there is no effect on net savings. OK? That overall, this big tax break wasn't doing anything for savings. And in general-- now, that's finding 1. Finding 2, I'll come back to summary.

Finding 2 was Denmark also set up a new system at the same time which basically mandated that all Danish people have to contribute 1% of their earnings to a savings account. That change did increase savings. So what's going on here? What's going on here is two very different models of savings from two different populations. For non-savers, behavioral incentives are what matter. So tax breaks don't really affect them. They're not really paying attention to tax breaks. But if you say you have to save, or you make other behavioral interventions, they save.

For high savers, they pay attention to tax rates. And they're just willing to reshuffle. So in some sense, the problem with tax subsidy retirement savings is, for the non-savers, they don't make much of a difference because non savers don't really pay attention to them. For savers, they just cause reshuffling. So at the end of the day, it's a very negative study and very negative piece of evidence for tax breaks for retirement savings. The tax rates of retirement savings largely seem to serve to relabel and not to really increase national savings.

The real increase in national savings comes from things we do to actually get people who wouldn't participate to participate in the system. Stuff like mandated savings, stuff like, for example, one of the most famous studies ever in behavioral economics is a study that was done by Brigitte Omadrian, where she looked at what happened when firms changed the way people sign up for 401k's. It used to be when you got to the firm, they gave you a form like, do you want health insurance? Yes or no? Do you want 401k? Yes or no? And no young workers would choose 401k's because they wanted to go party.

They then changed the form quite simply. They simply changed it to, if you don't want a 401k, check here. Rather than if you do want a 401k, check here, if you don't want a 401k, check here. Now, in any standard model, that should make no difference. It raised enrollment rates from 25% to 80% among young workers. Think about that for a second. That's profound. And it massively increased their savings. So that basically, the idea is for many people, savings is a passive activity.

And if you passively can nudge them to save more, they will-- by enrolling them in retirement accounts, by mandating retirement savings. For other people who are high savers, they are largely going to save anyway, and that these tax breaks largely serve to reshuffle their assets. Now, let me just say I'm stating the conclusion very, extremely. There are other studies which suggest that these accounts do increase net savings.

But I would say that the totality of the evidence suggests that there's not a whole lot of increase in savings coming from the tax break part. Most of it comes from the part of getting people to put money in forms they can't access. And so it increases their savings. OK? Questions about that?

AUDIENCE: [INAUDIBLE].

PROFESSOR: Yeah?

AUDIENCE: Do you think that it would ever be possible for America to mandate savings?

PROFESSOR: We do-- well, actually, there are-- some states have started introducing what's called auto IRAs, which is basically it's a way for firms-- it's not a national mandate, but it's a state-level plan for firms that can sign up firms. So it's basically more efficient. But actually mandating savings-- and we do that with Social Security, effectively. But I think that's going to be very challenging.

But in some sense, if you think about the money we spend on tax breaks every year, if we just took that money and instead said, we're going to distribute that money and just put it into people's accounts if they're-- because the bottom line is the fundamental fact about savings is most people don't save. Most savings is done by a very small number of very rich people.

So when you subsidize savings, you're actually going after the people you actually-- who are the wrong set of people to go after that. They're people that save a lot anyway. And that's why the Chetty study found that when you gave this bigger tax break, it didn't-- this smaller tax break didn't really change savings. Because those folks save anyway. So you really have two populations, the non-savers and the savers.

For the non-savers, what really matters is behavioral incentives in getting them to save. For the savers, they're going to save no matter what. Yeah?

AUDIENCE: Do you think it makes sense to have a policy where you-- the government says, OK, if you-- we're going to top everyone up to some baseline amount of savings contribution. The people who are going to save anyway, they are planning on saving a lot. They won't get any of that. People who wouldn't save at all, they just get that basically straight from the government.

PROFESSOR: I mean, in some sense, that's what privatized Social Security would be. Privatized Social Security would be instead of your taxes going to pay tomorrow's workers, your taxes are going to an account that you would get. And we'd mandate you do it. That would be a national mandate, privatized national mandatory savings. That'd be some floor. You could save on top of it, if you wanted. OK?

So I guess what I'm saying is the evidence suggests that if we took whatever the amount of money we spend on tax breaks for savings, and instead gave that money to every American in the form of a couple hundred dollars in savings in their account, that would raise savings in America more than with the current system. That seems to be the evidence. OK? Yeah?

AUDIENCE: If the tax break is not working, then why not move it in [INAUDIBLE]?

PROFESSOR: Chapter 9. Look, I think that it's theoretically very attractive that if you give a tax break to savings, people will do more of it. And I think that unfortunately, the evidence has not carried the day. I would say, once again, I'm giving you my interpretation of the evidence. I'm sure other people teach this course in other places will-- which will discount the Chetty study because it's in Denmark, and find some study in America, which supports the way that I want to look. I think the totality of evidence supports my view on this. All right. OK.

Now, that's chapter 22. Let's go into chapter 23. Chapter 23 is going to be different in the sense that it's still about behavioral responses to taxation. But chapter 21 and 22 are about behavioral responses to taxes on flows, how much you earn from labor income, how much you earn in interest. Chapter 23 is about taxes on stocks. Not stocks and bonds, but amounts, taxes on wealth.

And that's what we're going to talk about in chapter 23, is things about not just how much you're earning, but taxes that affect your actual level of wealth, as well as taxes that affect the amount of risk you take. So, so far we're talking about taxes that affect mean flows like interest and labor income. We also talk about taxes that affect the amount of risk you take. So let's start with that. Let's ask, how does taxing risk impact risk taking?

Well, you might say, well, that's pretty obvious. If you tax how much risk I take, I'm going to take less risk. But in fact, you'd be wrong. And to see why, let's go to table 23-1 for a very famous model back from the 19-- what is this, 1954? '44, the Domar-Musgrave model. They said, imagine a world where you have an investment that could pay-- there's a bet you could take where you invest $100. If you win, you earn $20. If you lose, you lose $20.

And let's imagine there's no taxes, OK? So you just have a system where you put in your $100, you win $20, you lose $20. Now imagine you put in a tax system, OK, where basically we say if you win, we're going to tax you. And if you lose, we're going to let you deduct your losses from taxes. So it's a neutral tax to the extent that it's Haig-Simons, right? You win, your consumption opportunities are higher. We'll tax you more. You lose, your consumption taxes are lower. We'll tax you less.

So if you win that gets added to your taxes. If you lose, it gets subtracted from your taxes. How would that work? Well, if you look at table 23-1, if there's a 50% tax rate, a 50% tax rate if you win, 50% deduction if you lose, then if you win, you keep $10. If you lose, you lose $10.

Now here's the key point. With that system, I can completely undo the effect of taxation. How? Remember, individuals will always-- if you're at an equilibrium and you can undo government efforts to move you from equilibrium, you always will. You're happy there. I claim you can get back to exactly where you were. And how do you do that? How do you get back to exactly where you were in the first row? Yeah?

AUDIENCE: [INAUDIBLE].

PROFESSOR: Just double your bet. If you double your bet, then it's win $40, lose $40, which after tax is win $20, lose $20. So you're back to where you were. So literally you can completely offset government taxation. Why? Because the government is a silent partner. The government is just saying, I'm a partner. I'm taking half of what you got. So what does this say taxes do? Taxes raise risk taking. Higher taxes cause more taking of risks.

Because taxes essentially are the government grabbing a piece of your pie? So you just want a bigger pie, so you end up with the same-size piece. So it's the opposite of the standard intuition, that taxing risk actually causes more risk taking. OK?

Now, that is, of course, not a description of the world. It's a description of a simple world, worlds that have existed, but not in reality. And in reality, there's two complications. The first is we don't let people fully offset their losses. And the reason is because we're basically worried about tax shenanigans, worried people are going to figure out some way to create all these massive paper losses and cost the government a ton of money.

So we generally have what we call a loss offset. So when you have money, when you make income, you're taxed on it no matter what. When you lose income, there's a limit on how much you can deduct on your taxes. So let's imagine a world. If you win, you get taxed at 50%. But if you lose, you don't get any tax break at all. Well, in that world, if you double your bet to $200, it's win $20, lose $40, which is not as good as the first row. So you won't necessarily want to double your bet. So that's one reason why this model might not hold.

A second reason is that in America, we have progressive taxation. The richer you are, the more you pay in taxes. What does that mean? That means if you win, you pay in a higher tax bracket. If you lose, you pay a lower tax bracket. That will also have an effect. So for example, let's imagine-- double my bet. But let's imagine a tax rate, if I win, is 75% The tax if I lose is 50%. Well, then now win is $15 and lose is minus $20. Once again, it's not the same.

So complications make this simple model more difficult. But the bottom line is your basic intuition, which is if I tax risk, there will be less of it, is not obviously right. Because when the government comes in as a silent partner, there's this other effect, which is you want to increase your risk taking to offset the government taking its share. OK? That's the standard model. And essentially, that is kind of our starting point for thinking about taxation and risk taking.

Well, what do we know? What's the actual evidence? Well, the evidence here sucks. And we really don't know the answer, actually, to this question. We do not have a good answer about in general how government taxation of risk impacts risk taking. We don't have a good answer. Now, we do have certain applications which give us some answers. And the most important application is to what's called capital gains taxation.

This is something someone mentioned before. Capital gains taxation is the tax you pay on an increased value of your assets. So the way capital gains taxes work is you are taxed on realization. That is if you invest in something, you pay some price, that's called your basis. So let's say you buy-- let's say in this example, you buy a painting for $100. That's your basis.

When you sell it, that's your sales price. You are taxed on the difference between the sales price and the basis. The fact it got more valuable along the way is irrelevant. A bank account is taxed on accrual. Every year when you earn interest, you're taxed on it. A capital gains is taxed on realization. You're only taxed when you sell it. So for example, if you-- let's say you had a painting that you bought for $100, increased in value by 10% for years per year.

So after 7 years, the painting is worth $195. And let's say the capital gains tax rate is 20%. So you have a $95 capital gain. The painting has gone from $100 to $195. It's a 20% capital gains tax rate, so you pay $19 in taxes. Let's say instead you-- so you have not-- you paid $19. So at the end of the day, you're $95 minus $19. You have $76. If instead you put that same $100 into a bank account and every-- at the same 10% rate of interest, but had to pay taxes every year, you'd only have $71.

Why? Because by delaying paying taxes, you're better off. The capital gains allows you to delay the taxes till the end. The money in the bank, you pay taxes every time. And that tax money you pay gets taken out, and the government earns interest on it. You don't. OK? So taxation on realization is an implicit tax break. By taxing only when you sell it as opposed to along the way, you get an implicit tax break. OK? Because we delay when you pay the taxes. OK.

Why do we do this? In principle, we don't have to. In principle, we could have a-- what's called a mark-to-market tax system, which is every period, I'm going to look at your asset. I'm going to currently value it and tax you on the delta between what you paid for it between the last period value and this period's value. So for stocks, it would be easy. I bought a stock for $100. One year later. I haven't sold it, but the stock is worth $110. I tax you on $10. It's easy.

The problem is it's not so easy for paintings. You'd have to literally go in and every year, for every painting, reevaluate it-- be a nightmare. So the problem is, for non-liquid assets in particular, much of capital gains are on privately-held businesses. It would be very hard to ever value those businesses, be enormous undertaking. So that's why we don't actually do mark-to-market.

There's some interesting proposals of ways to get around that are quite thought provoking. For example, you could-- at the end when you tax them, you could tax them higher to make up for the inside build-up. There's things you could do. But literal mark-to-market is very, very hard to pull off. Not impossible, but hard. So that's why, in some sense, we kind of just are stuck with taxing realization.

So basically, we're stuck with the capital gains tax rate being effectively lower than the tax rate on, say, bank interest. OK? Despite that, we have additional subsidies to capital gains taxation. First of all, we have the step up in basis at death. What is that? That complicated thing is just the following.

Let's say I have a painting that I bought for $100 and is worth $1 million. If I sell it the day before I die, I pay capital gains tax on a million minus $100. If I leave it to my kid and sell it the next day for $1,000,001, they pay tax on $1 because the basis gets reset to what it was worth when I left it to them. So when I die and leave it to my kids, the books get wiped clean and they reset the basis it was worth when my kids got it.

That's a huge subsidy. That means, effectively, I can avoid capital gains taxation by dying. OK? So that's an additional subsidy. More relevantly, it's a funny way to say it. But more relevant, the point is if you hold your capital gains, you're never taxed on them. Now, there's a state tax association. We'll come to that next time. But for the capital gains piece, you're never taxed on it. So that's another subsidy. Yeah?

AUDIENCE: What happens if [INAUDIBLE]?

PROFESSOR: This guy. What is up with this guy? He's getting divorced. He's faking his death.

[LAUGHTER]

I don't know. Presumably, if you get away with it, your kids that avoid capital gains taxation, they can send you checks in Turks and Caicos or wherever you're hanging out. So there's that argument. There's another tax preference to capital gains, which is a lot of capital gains are on housing. A lot of people's biggest asset's their house. So actually, we exclude the first $500,000 of capital gains on your house.

So not only do we not tax the realization. We don't actually tax it at all for capital gains less than $500,000. Then there's the third tax subsidy, which is for almost all of US history, except for a brief shining moment for three years. We have tax capital gains at a lower rate than other forms of capital. So right now, if you save in the bank and you're rich, you pay-- I think it's 37.5% is the top tax rate. If it's a capital gain, saving capital gains, you pay 20%.

So despite the fact that it's subsidized by realization, subsidized by step up basis in death, subsidized by housing, the tax rate is also cut largely in half and almost always has been from-- I guess it was seven years from-- '86 to '93 is the only time in my lifetime that capital gains have been taxed the same rate as regular income. If you're going to ask why, I'm going to cover that next.

AUDIENCE: [INAUDIBLE].

PROFESSOR: The house piece was you're not taxed on your first $500,000 of capital gains on your house.

AUDIENCE: [INAUDIBLE].

PROFESSOR: Yeah

AUDIENCE: For some assets, why is it that if you [? put ?] [? it ?] for longer, [INAUDIBLE]?

PROFESSOR: That's a good point. I'm taking a shorthand. The capital gains tax break is only applied to assets that are held more than six months. So if you sell in the first six months, you get all the other benefits, but you don't get the lower rate. Lower rate's on what's called long-term capital gains. It's either six months or a year. I forget. But that's what most people do. OK?

So basically the point is, you're right. But actually, I'm going to come back. It's a good point. I should have emphasized this. So you only get the tax rate if you hold on to your assets for at least-- I forget if it's six months or a year. OK? So why? OK. I'm not going to give you a cheap answer of chapter 9 here. I'm going to actually give you a legitimate answer.

Why do we have this system of tax breaks for capital gains? Well, there's really three arguments. The first argument of why we have this is inflation. Which is, look, I said that you sold that painting for $195 seven years later. But what if prices were going up 10% a year, as well? Then you're no richer. Yeah, you sold $185, but Skittles now costs $1.95 a bag. So you're no richer. And so this is-- we should address that.

This is a terrible argument for two reasons. First of all, if you're worried about inflation, there's an easy way to fix that, which is index the prices. We've done it with tax brackets. No reason we couldn't do it with asset values. The second is this same problem applies to other forms of capital [? taxationists, ?] too. We talked about why it screws up the returns to savings in chapter 22. So why-- if it's a problem, why do we feel like we have to cut the capital gains tax rate, but not those other tax rates if we're really worried about inflation? This is a weak argument. Strikeout.

Two, OK? Two, that there's improved efficiency of capital allocation. And this is a legitimate argument and an interesting one. Because we can only tax capital gains on realization, the longer you hold them, the better you are. And actually, because we only cut the tax rate if you held it for a year, the longer-- at least you want to hold it for that long. And even beyond, you want to keep holding it.

What does that mean? That means people might pass up efficient investment opportunities because they are locked in on their capital gains. So let's say you're someone who's got a painting that's gone way up in value. OK? You're 75. You got a painting that's gone up millions in value, and you got this great investment opportunity. But if you sell your painting to invest, you got to pay 20% taxes. If you wait till you die, you pay nothing.

Unless that investment opportunity is really, really good, I'm not going to take it. So this is going to lock me into old investments and make me unwilling to sell my assets. And it's inherent. It's inherent in the fact that we tax on realization. There's an inherent bias towards lock-in and that basically people will not efficiently invest their assets. OK? That's a legit argument, a good point.

The third argument is also legitimate and a good point, which is that lower capital gains encourages entrepreneurship. That basically, if you think about what's the tax rate you care about when you're starting a company, a tech company, it's ultimately you want to get rich. It's not the money you're going to make. In fact, these companies make no money. Tesla is still negative profit or maybe marginally positive. It's the money you make when your stock goes through the roof and you sell it, and then you're super rich. Well, the relevant tax rate, then is capital gains. So the idea is we're going to encourage entrepreneurship by having a lower capital gains tax rate. OK?

But this is actually a fairly weak argument for three reasons. First of all, as I just showed you 10 minutes ago, it's not clear it works. A lower tax rate may or may not encourage risk taking. It's ambiguous. So that's the first problem. The second problem, only a tiny fraction of capital gains actually go to entrepreneurs. Venture capital is 1% of all capital in America. OK? More generally, only about 10% of venture capital investments that are actually affected, venture capital investors actually pay taxes. Most are pensions and other tax-exempt organizations. So by cutting the taxes, VC is a tiny part of capital. And most people invest in VC don't pay those taxes anyway. So it's not clear you're encouraging investment for that reason.

And then finally, there's the very important point, which is like the inframarginal point on steroids. Remember I said the inframarginal point is we spend a lot of money rewarding activity that already happened in order to encourage an activity that's going to happen. Well, this is even worse because we're not-- so that would say the idea of the infomercial, marginal argument was maybe I would have made that investment anyway.

So let's say it's a capital gains of $40 versus $20. And you say by cutting it to $20, I'll encourage the investment. Well, first of all, we would have done the investment anyway, then you've just wasted that money. But what else? You've also just cut the tax rate in half on all past investments. Now, you're clearly not encouraging anything there. But you've given a huge tax break. So it's a double inframarginal effect. The inframarginal effect we learned before, plus an extra piece, which is a tax break to all the past investments OK? That doesn't encourage investment.

Let me put it another way. Here's the way I like to think about it. And my mentor Larry Summers proposed this in 1987. I quite like this. Imagine I announced I was going to capital gains tax cut, starting on all investment made starting tomorrow. On all investment starting tomorrow, get a cap-- that would have exactly the same effect of encouraging entrepreneurship, but would not give away a ton of money to people who already invested in the past. That would never fly in Washington.

And the reason it flies is because this isn't the real reason that people like lower capital gains tax cuts. It's because when you cut capital gains, you give a break to old capital as well as new capital. And that's an important-- that's why I say it's the inframarginal effect on steroids. It's not just rewarding investment that would have happened anyway. You're rewarding past investment which, by definition, happened anyway.

And that is why it's-- so once again, it's not that it's not encouraging entrepreneurship. I'm not saying that this effect is zero. I'm saying the inframarginal effect is massive compared to the potential marginal effect. Yeah?

AUDIENCE: Is it necessarily true that you'd see the same level of encouraged entrepreneurship? Because don't you avoid some of the lock-in issues by cutting--

PROFESSOR: Excellent, excellent point. You wouldn't get this. You would get encouraged entrepreneurship. You wouldn't get this. Now, the question is-- so this is a separate point. If you didn't unlock the past capital gains, you wouldn't get this. That's a great point. You would get this. That's why I'm saying this is the most legitimate of the arguments. OK, this is the one I respect the most.

Because this one, I think it's a weak argument and the evidence is unclear. This one, I think you just fix any many other ways. This one's a legit argument. And the only way to get out of this is with a lower rate. Yeah?

AUDIENCE: For number 2, if you could mark-to-market, [? that ?] would be even more efficient?

PROFESSOR: Mark-to-market, then this would go away. And we clearly shouldn't give a capital gains tax break. Yeah, if you could mark-to-market. Now on the other hand, if you mark-to-market, you'd lose the benefit of taxing realization. So then capital gains taxes-- let's say we just, tomorrow, mark-to-market OK? Well, capital gains taxes would go up.

Now, you then say, well, we should maybe raise them even more because you'd lose this argument. But that seems like a double whammy. You'd already be raising capital gains tax if you could mark-to-market. OK? Other questions? OK.

AUDIENCE: [INAUDIBLE] argument that lower tax rates means more money in the economy, which means--

PROFESSOR: Well, we say that-- what we always say to that is we're assuming a full employment economy in all of these discussions. We're not doing macro. Now, if you want to take that argument, that's great. But let's talk. That's a great segue to why not prefer capital gains taxation. OK? Well, here's why not.

In 2017, capital gains accounted for 2/3 of the incomes of the top 0.01% of households, people's income of above $50 million. 2/3 of their income was capital gains. For the bottom 80% of households, capital gains are 5% of their income. OK? Here's another way to put it. The top 0.1%-- 0.1% of taxpayers pay the same amount of capital gains taxes as the bottom 99% of capital gains taxpayers. It's an incredibly progressive tax.

So the reason why we wouldn't necessarily want to favor capital gains-- if we go back to our optimal income tax discussion, you're trading off efficiency against redistribution. You get a lot of distribution from this tax. Moreover, that's how it wouldn't help. It doesn't help these arguments that Trump made for his tax cuts in 2017, boosting the economy-- doesn't work. It boosts the stock market. But it's going to people who just save money anyway. All the money is going to people who aren't consuming it on the margin. They're just saving it.

Remember, if we want to boost the economy, we get money in the hands of poor people. They spend it. Getting money in the hands of the rich people doesn't boost the economy. It just boosts their bank accounts. You boost the economy getting money in the hands of poor people. So the main argument for raising capital gains taxes is that it's very progressive.

The second argument, it goes back to chapter 18, which it moves us back to the Haig-Simons principle of a broad [? brace ?] with a low rate. There's two points here. One is the higher rate is the rate on capital gains, the more revenues we'll have. The lower the rate can be. That's a small argument. Capital gains revenues lost aren't that large.

The bigger point is the following. It's the idea of tax wedges, which is by taxing capital gains at a [INAUDIBLE] income, you create jobs for an army of lawyers. Remember, lawyers are just deadweight loss-- create jobs for an army of lawyers to figure out how to recategorize income as capital gains, therefore creating deadweight loss to just cost the government tax revenues by shifting money to this other form.

If all income was taxed the same, none of those lawyers would have jobs. So you wouldn't be wasting that money. They'd go to something productive, like be doctors or something. And at the same time, you'd raise more money. So as the Haig-Simons argument, as well. So under both efficiency-- and moreover, there's another version of that argument. The point is that basically, if you're thinking of investing, we want you to invest in the asset that yields the highest return, not the one which yields the highest tax break.

By taxing all asset income equally, we maximize the effect. We basically maximize the incentive to effect in the highest returning asset, not the one which yields the highest tax break. OK? And so that is-- those are strong arguments. Indeed, I-- now, to be fair, I like to own where I'm outside the mainstream. I'm outside the mainstream on this.

Most economists think that low-- having lower capital gains tax rates is a good idea. Indeed, most countries do. Actually, even these liberal lefty countries in Europe have much higher tax rates on labor income than we do. They actually have very low tax rates on capital income. Almost every major country has a tax preference for capital gains. So clearly, this is in the water

Clearly, this is a feeling that we can encourage risk taking by raising capital-- by lowering capital gains tax rates. There's no evidence to that effect. Now, I'm not saying there's evidence to the contrary. It just hasn't really been well studied.

What we can do is we can ask, what is the elasticity of capital gains with respect to the tax rate? That is, we can ask, are we on the wrong side of the Laffer curve? If raising capital gains taxes by 1% means we lose tax revenues-- so the argument-- the main argument people make-- people often rely on the locket argument. They'll say, well, look, if we raise tax on capital gains, people will never sell their assets, and we'll actually lose money. There could be Laffer effect here, right?

If I raised tax by 1% and people decrease their sales by more than 1%, then actually we could lose money by raising capital gains tax rates. So there's actually a wonderful study of that, and that's illustrated in figure 23-2. OK? Which is from a study where they looked at variation across states in capital gains tax rates. And this is a graph of the regression coefficients of what we call an event study.

So how do we read this table? So first of all, the green line is the regression estimates. The bars are the standard error bars. Remember, statistical evidence is only as valuable as is reliable. OK? Lots of people come up with an estimate and say this, this did this. But unless they're statistically reliably, it's useless. So what the error bars are-- what those error bars are telling you is, how reliable is the estimate?

What you see is if you look to the left of period 0, you get an estimate of 0. That is, what that's saying, is that future capital gains tax cuts, which people don't know about, don't affect behavior today. That's good. You should want that. That's what we call a specification check. If that was not 0, you'd worry that people-- that these capital gains cuts were, for example, responding to other things that were in the economy. This says they're effectively random.

Then you see, the minute they cut capital gains tax rates, capital gains realizations do go up. What that says is some combination of new entrepreneurial activity and the lock in effect exists. We can't tell which it is. We know more capital gains are realized and capital gains tax rate goes up. We don't know, is that because people sold assets they were just holding on to or they actually made new investments and took new risks? That's the piece we haven't really separated.

But the important thing is the elasticity here is well below 1. The elasticity is around minus 0.4, which says that we could raise a lot more revenues by taxing capital gains or well on the right side of the Laffer curve. In other words, this says that we could basically raise capital gains tax rate from its current level of 20% to something like 50% and still raise money. Now, the goal with taxation is not to just raise money. You don't have an optimal tax.

But remember, what term is an optimal tax? It's the benefits of redistribution against the costs of lost revenues. Well here the cost loss revenue says that we can have a much higher tax rates. And the benefit is huge. Their argument would say there's not a lot of argument for taxing capital gains less than other income. You favor super rich people, which is not the goal of the tax system. And you actually lose money, that you could make money if you--

In other words, if you tax capital gains more highly, you collect more tax revenues from a wealthier segment of the population. OK? Now once again, what's the bottom line efficiency? That depends on a question we still haven't answer, which is, how much is discouraging entrepreneurial activity as opposed to just undoing the lock in? But the evidence-- there's at least no strong evidence that it is encouraging a lot of entrepreneurial activity. OK?

So that's the first thing we want to cover in this chapter. Why don't I stop a little early rather than going on to the next part? Because I'm going to get into the next part. I'm going to get into the estate tax, which is a complicated topic. And I want to do that all at once. So I'm just going to stop a little early.