[SQUEAKING]

[RUSTLING]

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JON GRUBER: All right. I was disappointed about my explanation about corporate taxation last time. Saw a lot of confused faces. It's a hard topic, but I think I'll make it easier. So I'm going to try again.

If you remember last time, we were talking about how taxation affects corporation investment decisions. And we said that when you invest $1, you get a return, which is the marginal product of capital, absent taxation.

Then we said, look, if the government comes in and has a corporate tax, then every dollar you take home, they're going to take some of it. So you're only going to take home MPK times 1 minus tau. OK? I think that part people seemed OK with.

Stop me, once again, if it's not clear. But that's your net rate of return. Now, think of it this way. The government then comes along and says you know what, for every dollar of investment you make, I'm going to give you a deal. I'm going to give you two discounts. One discount is I'm going to give you a rebate, which is a depreciation deduction.

And I'm going to express that in terms of the present value of the depreciation deduction, Z. So Z is basically the present value of all the tax benefits you're going to get. If they're in the future, they're worth less than if they're sooner.

So accelerated depreciation has a higher Z than regular depreciation-- than straight-line depreciation. What is that worth to you? Well you get to deduct that from your tax base. So that's worth tau Z to you.

Remember, this goes back to our individual taxation discussion. Deductions are not worth the full amount. They're only worth the amount of the deduction times your tax rate. So that's one discount. You get off the price. You get that.

The other discount you get is in addition, for every dollar investment you make, I'm going to rebate you in a credit alpha cents. This is an additional incentive. So not only do you allow this depreciation deduction, I'm also going to give you alpha cents back in just a pure rebate, pure tax credit.

So what does that mean? That means the price of your dollar of investment has fallen. What has it fallen to? It's fallen to 1 minus tau Z minus alpha. That's what the price of $1-- $1 investment, you spend $1, but you get tau Z and alpha back. So this is your net price.

So now what that means is you want to compare-- this is what I didn't make clear last time. You want to say the net return to $1 of investment-- first of all, dollar of investment buys you more than $1. It buys me 1 minus tau Z minus alpha. So that's the denominator.

$1 buys more than $1. This is less than 1. So it blows up my return. But then that blown-up return is knocked down by the tax rate. So two things are going on to my rate of return. I'm getting a higher rate of return than I might have thought because my dollar is buying more than $1, because I'm getting these rebates, but a lower rate of return, because the government is taking a share.

What that means is the effective tax rate is the-- so this is what happens after taxes come in. What's my effective tax rate? Well, it's what I would have gotten without taxes, which is MPK, minus what I get with taxes.

It's what I would have gotten without tax. I would have gotten MP sub K. Now I get this beast with taxes. So what that means is, what is the effective tax rate equivalent to? Well, if you do the math on this, you end up finding that the effective tax rate can be written as-- I want to make sure I get this right, because I've already made this difficult enough.

The effective tax rate can be written as tau minus tau Z minus alpha over 1 minus tau Z minus alpha. That is the effective tax rate. That's just basically take 1-- you basically subtract this. You pull MPK out, take 1 minus this thing, rearrange, and you get this term-- this ugly-looking term.

But let's just stare at this for a minute. What does this mean? Let's imagine a world where Z is 0 and alpha is 0. Then what's the effective tax rate? Tau, right? That's the effective reduction in your rate of return.

But as alpha gets positive and Z gets positive, the effective tax rate falls. OK? Why does it fall? Because you're losing it in the denominator. It's causing it to fall. So basically, as alpha gets positive and Z gets positive, your effective tax rate falls.

So for example, with an alpha of 0-- let's say that tau was 35% and let's say that Z is 50%. So the depreciation deduction would be 50%. The PDV of the depreciation deduction is 50% of the purchase price.

So every dollar of investment I make, I'm going to get $0.50 back in present value depreciation deductions. What that means is the effective tax rate, if you put these two in this formula, is 11.7%.

That means that after you account for the fact you get depreciation deduction, really you're only paying 11.7% of your income in taxes on that marginal dollar of investment. So the marginal dollar of investment yields MPK. Some of that gets taken away. Some gets given back in a rebate. When you put it all together, that dollar of investment is taxed at 11.7%. Yeah.

AUDIENCE: What does alpha represent again?

JON GRUBER: I'm sorry. Alpha is the investment tax credit. It's like a rebate you get for-- you get alpha cents back on every dollar of investment. OK, does that make sense to folks? Please ask questions. Yeah.

AUDIENCE: What's the intuition or logic behind dividing by the term in the bottom?

JON GRUBER: Oh, yeah. This is what's confusing. It's different in the book. I'm going to rewrite it in the next edition of the book. The idea is that basically this is what you get per dollar. OK?

But $1 is less than $1 now. This is the discount you're getting off the price. So in some sense, the bottom line is, every time you make an investment, it costs you this and yields this. So it's what it yields over what it costs.

It yields this and it costs you this. OK? Questions about that? All right. So that's a form of effective tax rate. Here's the key point. What do you get if Z-- what do you get if Z equals 1 and alpha equals 0? What's the effective tax rate? Yeah.

0. If Z equals 1, then the numerator is 0. So the effective tax rate is 0. So with expensing, literally there's no tax burden on investment. Because basically I tax you on it, but I let you deduct it. So there's no tax burden.

And if alpha was also positive, the effective tax rate would be negative. So with an alpha of 0.1 and a Z of 1, the effective tax rate is minus 14%. So the point is, because of the way they set up the tax system, it can actually incentivize-- literally, the US tax code can incentivize investment.

And how can it do so? By effectively making the price of investment less than-- makes it less than free-- better than free, from, a tax perspective because you get this depreciation deduction plus investment tax credit. Yeah.

AUDIENCE: So tau is the corporate income tax.

JON GRUBER: Yes.

AUDIENCE: And this is how that affects investment.

JON GRUBER: Yes. Yes. Good clarifications. So basically, this is for the dollar of investment, what are you getting back? The point is, what you're getting back-- what is the difference between what you get back in a world without taxation and a world with taxation? That's the key.

It's the difference between what you get back in a world without taxation and what you get back in a world with taxation. That difference is this function, which can be positive or negative. So basically, we have a situation where-- now, the question is, what's the right level?

How do we think about what the right level of corporate tax is? Well, that essentially is going to go back to how we think about optimal tax. From an efficiency perspective, it's going to depend on what's the efficiency cost of reducing investment. From an equity perspective, it's going to be the fact that corporate taxes are generally paid by wealthier people. So it'll be an equity efficiency trade-off with cutting corporate taxation.

What I got to last time was there's an extra wrinkle. And this is subtle, but, it's important to recognize, which is when I introduce an alpha today, that rewards all future investment, but doesn't do any good to the people who had old investments.

When I cut tau, everybody wins. So it's more expensive. For the same boom in investment, it's more expensive to cut tau than to introduce an alpha. For the same budget cost, if I have a budget-neutral cut in tau in the structure of alpha, I get a much bigger bang for the buck for the alpha because that promotes forward-going investment and doesn't reward all the investment made in the past. OK? Questions about that? Yeah.

AUDIENCE: With a negative effective tax rate, that means the government is literally paying you?

JON GRUBER: Subsidizing investment, which it's not implausible. Investment yields growth and jobs. And it's not crazy, you'd have a subsidy to investment.

AUDIENCE: But is this off of each marginal dollar, like each more--

JON GRUBER: Each additional dollar, you're actually going to-- literally, you'll make more money from investing with taxes than without it. OK, great. So trying again, I think that's clearly what's in the book. And I'm going to change it the next edition.

OK, now that gets even harder when we recognize that companies don't exist just in the US, but exist in the international world. In particular, many firms are multinational firms. And they have subsidiaries abroad, which are parts of their business which are headquartered abroad. OK?

And this complicates taxes. So General Electric in 2010 had worldwide profits of $14.2 billion, of which $5.1 billion came from the US. OK? $14.1 billion, $5 billion in the US. Total US taxes paid, negative $2 billion. They got a rebate in the US.

How the hell was that possible? Well, let's now talk about international taxation. When we talk about international taxation, there are fundamentally two different ways you can tax international companies. There's what's called a territorial system and a global system.

A territorial system is a system where literally you're just taxed on what you make in that country. So literally, whatever you make in that country, you pay tax on it in that country. What you make in another country you pay tax in that country.

A global system is one where you're taxed based on where your headquarters is, basically. So essentially, if a multinational company-- if GE makes money around the world, it's taxed in the US.

Now basically, what is the big issue with these systems? The big issue with these systems is that when you produce in many countries, it is hard to figure out where profit comes from. And in particular, we have a problem of what's called transfer pricing.

This is for our friend in the back who likes all the fun tricks you can do with taxes. This will be another fun one for you. OK, so imagine that France has a 40% tax on corporate profits.

So imagine in France the tax is 40% and in the US it's 21%. OK? Now, imagine further that an American company is a French subsidiary that manufactures microchips at a cost of $100 each.

So the manufacturing cost is $100 and it's in France. They make it in France and it costs $100. They then transfer those microchips to the US, where in the US-- the manufacturing costs, and then the remaining costs are another $500. You put the chip in the computer, you put the computer together, et cetera.

And then after that, you sell for $1,000. So you've put $100 of cost in i France, $500 in the US, and you sell for $1,000 for $400 profit. Now, let's say the question is, who does the profit belong to? It's not obvious.

So the US company could say that the profit all is due to what was produced in France. It wouldn't exist without the original manufacturing costs on the chip. Let's call this the chip cost. The chip cost, and this is the rest.

The chip costs $100. Look, we wouldn't have earned this profit without the chip. So we're going to say that we are going to assume the profits were in France. So we're going to say that chip was actually worth $500. It only cost $100 to produce it, but I wouldn't have had the $400 profit without it.

So I'm going to claim a $500 expense in France, because why not? I can do that. OK, I'm going to claim a $500 expense in France. That means that the French company would pay $160 in taxes.

So in this world, the French company would pay taxes on $400. A 40%, that's $160 in taxes. And the American company would have no profits. And so they'd pay no tax. So you'd pay $160 in tax because you would have $400 in profits located in France. OK, questions about that?

Let's do the other extreme. Let's imagine this company said, no, chips are chips, whatever. It wouldn't exist without good old USA production putting the thing together. So all the profits are earned in the US.

Now, if all the profits are earned in the US, then that means there's $400 in profits in the US. What do we pay in taxes? $81. So basically, we can cut our taxes in half by claiming the profits are due to the production in the US, not France.

Well, who's to say? The answer is, tax lawyers are to say, and you know my feeling on lawyers. OK? Lovely people, just it's a lot of work to basically figure out how to make the profits land in the place where it gets you the best tax deal.

As a result, you basically have this problem of transfer pricing that it's hard to know where the profits land. Now, tax authorities aren't dumb. They know about this, and they have what's called arm's length transaction laws, where you couldn't actually send the French company $500 for the chip, because nobody pays $500 for a chip.

So they'd say, look, you can't do that, but you could send them-- or you couldn't put it all in the US. And more importantly, you couldn't put it all in the US and say, look, you got to attribute some of the profit to the chip. You could contribute a small share of the profit to the chip. It's hard to know how much.

And remember, when you have this important thing about tax enforcement we'll talk about this lecture and next lecture, you have underpaid government tax lawyers fighting highly paid people whose job it is to minimize taxes. That's something the government is always going to lose. There's a challenge there to try to fight that battle.

So basically that is an example-- so an example is GlaxoSmithKline, the drug company, produces Zantac. You've all heard of Zantac. And they produce it in many countries. And at this time, the US was a much higher taxed country than the UK.

So they shifted profits to the UK. And the government basically eventually found that they'd underpaid about $5.2 billion in taxes by misstating the profits attributed to the UK, and eventually sued and won on that.

Now, that is a good example of the government figuring this out. I have great examples in the book. I don't have time to go through them. It's so much fun. But let's talk about the most fun one, which is Apple.

In 2011, Apple made 70% of its $34.2 billion in pre-tax profits abroad and paid a tax rate of 2.2% on those. And basically they're saying-- there were $74 billion they made in profits abroad. They said that basically between 2009 and 2012, only $74 billion in profits that were taxed abroad that theoretically could have been taxed at home.

How did they do this? Well, they're very creative because they're Apple. OK, what do they do? They go to Ireland. Ireland has essentially no corporate tax rate. They're what we call a tax haven. They try to encourage activity there by having no tax rate.

So basically, Apple made $34 billion in 2011. The numbers aren't important, just the concept. Made $34 billion in 2011 and reported that its Japanese subsidiary-- even though Japan is where they sell a ton of their stuff. If you've been in Japan, there's a lot of Apple stuff.

They only made $150 million in Japan, even though it's one of their biggest markets. Instead, they reported $22 billion in income in Ireland, which would be like six iPhones per person in Ireland.

Now, they've gone further. They now have AOI, Apple Operations International. It owns all of Apple's offshore production. AOI is a holding company that owns all Apple's offshore production. But AOI has no physical presence and no employees except for one Irish employee.

Because it's not managed or controlled in Ireland, Ireland does not recognize it as tax residency. Because it's not incorporated in the US, the US doesn't recognize tax residency. So basically, they created this thing that exists in limbo and paid no tax. Eventually they got caught and they got paid a little bit, but nothing as much as they should have owed. Yeah.

AUDIENCE: How can you create a corporation--

JON GRUBER: I'm not a tax lawyer. I'm not a tax lawyer. Don't try to figure it out. No matter what you figure out, they're smarter than you are.

AUDIENCE: It doesn't exist?

JON GRUBER: It doesn't exist. That's the point, is that basically there's all-- international taxation is incredibly hard because it's hard to talk about where money comes from when you're selling things and producing things in different countries.

So now, with that in mind, what are the relevant policy issues? Well, a big policy issue is basically, should we have our global system-- in fact, the US was virtually alone. Before the Trump tax cuts 2017, the US had a global tax system. What that meant was-- and by the way, we were alone.

Every other country in the world had a territorial tax. Every other major country had a territorial tax system. You're taxed on what you made there. The US had a global system. Now, if you have a true global system and people are taxed on where they produce and taxed in the US, that would be double taxation. That's unfair.

So what we did is we offered what was called a foreign tax credit. So the way it works is we said, look, you're selling shit in France. You're paying tax to France. We're going to give you credit for all the tax you pay in France. Anything that's left over, you'll owe the US.

So basically say, whatever profits you made, we'll level the US tax on it. But we'll give you credit for all the tax you paid to other countries. And we're going to have a global system that doesn't invoke double taxation.

The problem is they only know what you made in other countries when you bring it back to the US. So you make a bunch of money in other countries. You just report it to those tax authorities. But the US company has no reason to know about it until you bring it back.

So what that meant, there was a huge lock-in incentive to leave your money in other countries. Because basically, as long as it was there, you weren't paying that extra US tax from bringing it back. So there's this huge likelihood of capital gains lock-in effect. It was an international lock-in effect.

So basically, if you take the $74 billion in profits that Apple avoided through low foreign taxation, if they brought it back to the US, it would have taxed it. They only paid a 2.2% tax rate on that $74 billion. We would have said, we're going to take the rest. Our rate at that point was 35%.

We'll take another third of that, thank you. That would have been a nice chunk of change for the US Treasury. Instead, they just left it abroad, so we never saw it, so we never taxed it. So many people have argued that basically, we essentially already have a territorial system.

That basically, yeah, in theory we have a global system. But at the end of the day, since no one brings their money back. We don't really have a global system. We have a territorial system, which is basically we should just essentially give up on trying to tax the money made in other countries because they're not bringing it back anyway. Yeah.

AUDIENCE: Is that holding overseas but not reporting back to the US government illegal?

JON GRUBER: No, it's not illegal. It's totally legal. And more than that-- it's totally legal-- more than that, it's bizarre. So a big argument you heard for changing our tax system was there was all this money they held abroad, and they'd bring it back to the US and create all these jobs.

Paul Krugman was very good at explaining this. Let's be clear. It was literally in the same bank. It was in a bank. On one side was called Apple foreign profits. Another side was called Apple US profits.

When they brought it back, all they had to do was change the account number. It wasn't like they were bringing new money into America. It's just money sitting in a bank. It's which label was on it. Now you could say, well, maybe if they bring it back, then they've got to spend it in the US somehow. But they don't. They can just still leave it in the bank. Yeah.

AUDIENCE: Does the lock-in prevent them from spending it in the US without paying money? Or is it--

JON GRUBER: Well, they can spend whatever they want in the US. So what they do is they take loans in the US to do stuff and they pay the loans back with money from their foreign accounts.

So basically, the bottom line is people are saying, look, there was this lock-in and we should reduce it. And basically, we actually tried that. So in 2004, in the American Jobs Creation Act-- you got to love these names-- they actually essentially had a one-year tax holiday.

They said, we know you guys got all this money abroad. Bring it back. This year, you only pay 5% in taxes instead of the 35%. And over the next few years, US companies repatriated $312 billion.

And what they found was it created zero jobs, because it wasn't about-- they were just literally relabeling the money. They're like, OK, we don't have to keep holding it there. We can come bring it back to the US. Yeah.

AUDIENCE: When we talked about lock-in with the capital gains tax that had negative impacts, does this lock-in have any negative impacts?

JON GRUBER: Not really. I mean, that's the point of this argument, because it's just funny money. Now, in theory, it could. Remember I said capital is strangely immobile internationally?

You could imagine a world where capital that's labeled US could actually change people's investment decisions. It's possible. In theory, it shouldn't. It's possible it could. But the tax holiday suggested it didn't. Suggested basically nothing changed when they did that.

So basically, we have this tension of the fact they're keeping this money abroad. And we also have this other tension I talked about before, which is it's really not great to have tax provisions that don't work. It's undercuts the morality of the tax code to have tax provisions that don't work.

And so for a long time, many economists said, look, we should just have a territorial system. And then the Trump tax cuts, we did. We moved to a territorial tax system. Now, at the same time, what the Trump tax cuts did were fundamentally three large things.

The first was they cut the corporate tax rate from 35% to 21%. And second, we moved to a territorial system. So essentially, we became much more competitive internationally in terms of corporate taxation. Much more competitive internationally.

Now, they did do a couple of things to try to reduce the-- because some people were repatriating money. So it is a money loser to go to a purely territorial system. You are giving up on the money people actually did bring back.

So they did a couple of things to try to address that. So for example, they actually imposed a one-time tax. They basically estimated how much money you had abroad, and did a one-time what's called deemed repatriation tax.

We know how much money you guys have abroad. We're going to tax you on that. We're going to have a new tax that didn't exist before, just grab some of that from you to try to make up for it. But the bottom line is, it's not really-- the bottom line is, I think if you poll economists, I think they're fairly generally positive on the corporate tax side of the Trump tax cuts.

Our rate probably was too high internationally to compete. We brought it down. We probably aren't losing that much going from global to territorial. We're losing some money. It's going to rich people. But it's not nearly-- it probably is also increasing efficiency and increasing investment in the US.

The problem was the following, which is, let's come back to our concept of tax wedges. Remember, there was a tax wedge between investing in the US and investing internationally. Because you invested in the US, you paid 35%, internationally, you paid more like low 20s.

So that was a tax wedge that reduced investment in the US. We addressed that by taking our rate down to 21%. The problem is in doing so, it created a new tax wedge, which is remember, you can do activity in the corporate sector or the non-corporate sector.

In the non-corporate sector, most people are rich. They pay the top marginal individual rate, which is about 39%. So before the tax reform, we had pretty flat incentives in two sectors. It was 35% for corporations, 39% for non-corporations.

Now all of a sudden, you've got 39% for non-corporations, 21% for corporations. So you've created a new wedge. So what do you do about that? Well, what Trump tax bill did was essentially give a huge tax break to non-corporate entities.

Basically, all these non-corporate entities, your doctor's offices, your car washes, all that, they all got a huge tax break to bring those rates in line with each other. And that was a terrible idea. That cost us a huge amount of money and basically just gave a bunch of money to rich guys.

I mean, these are largely rich people. Actually, if you look at a lot of the most wealthy-- a lot of the top 1%, you think of them as investment bankers and athletes. They're auto chain owners. They're laundromat chain owners. A lot of the richest Americans are actually people owning small businesses.

And they just got a huge tax break. And it's not clear entirely why. It's not clear entirely why we care so much if they're corporate or non-corporate. And certainly the amount of money that was spent-- it was $500 billion was spent to end this tax wedge-- it's not really clear why. Yeah.

AUDIENCE: Is the difference between those two types of entities whether they're publicly or privately held?

JON GRUBER: No, the difference is whether-- I'm sorry, yes. Yes, the difference is publicly or privately held. Yes. No, no, no. It's not public or privately held. Basically, there's different types of corporations. There's what's called C corps and S corps. And you're now exceeding my level of expertise.

AUDIENCE: That's the difference?

JON GRUBER: Yeah. So basically, it's an interesting point that essentially, there's tax wedges floating all over the place. And fixing them fixes some problems but creates others. And with each case, in the case of fixing the corporate tax wedge from other countries, that was probably a good policy move. Fixing this other tax wedge was incredibly expensive. It's not clear what good it did. That was probably an inefficient use of money. Yeah.

AUDIENCE: Do non-corporate businesses still have limited liability?

JON GRUBER: There's sort of a middle ground. So there's non-corporate non-corporate. That's kind of like your partnership or a self-employed person. Those what's called S corporations, which are essentially small corporations that still have limited liability, but they don't have, for example, a board of directors. They don't have a lot of things that public companies do.

Let me see if I have a better definition in here of S corps versus C corps. One second. The major difference between these two-- they're really pretty similar. Actually, here's the only meaningful difference. S corps pay individual tax, C corps pay corporate tax.

So essentially the point-- here is the way to think about it-- this is a better way to think about it. They're essentially the same. It's just before, you did it based on, I don't know, what was more convenient for you.

Now you'd be like, gee, I want to be a C corp, because that pays a lower tax. And people were worried about that. But it's not actually clear why that's a distortion, whether they're S corp or C corp. It's just two different labels. And yet we're spending $500 billion to equalize the playing field between those labels. That's the interesting question. OK? Questions about that?

OK. Now we're going to teach you everything you need to know about corporate finance in 15 minutes. You can save all your course-- I'm just joking. But let's talk about corporate finance.

Let's think about how taxes affect firms' investment-- how taxes affect how firms finance their investments. Now we're going from whether a firm invests to how they finance that investment. So go to figure 24-5.

Let's say that there's a firm that is going to make an investment. They're going to finance an investment. They're not going to use their retained earnings. They're going to finance an investment.

Actually, go back for a second to figure 24-1 to start. Remember, figure 24-1, if you want to finance an investment, the bottom arrow is you could use your retained earnings. We'll come back to that. Leave that aside for now.

Imagine you have retained earnings. You need to finance that investment by raising the money somehow. Now go back to figure 24-5. What you do with that money is going to depend on how you finance it.

For example, when you earn $1, let's say you finance that by borrowing. So that's the upper branch. You're then going to say, if you earn $1 and that's money that you owe-- if you earn $1 that you owe to the people who finance you, you give that dollar to the bondholders, and they will pay income tax on that.

But if you earn $1 and you have equity holders-- oh, and by the way, there's no corporate tax paid on it. Why? Because interest is deductible. So if you earn $1 and you're paying it to bondholders, you can deduct from your taxes that interest payment. So on net it cancels out.

But if you earn $1 and it goes to stockholders, you do pay corporate tax. The first step is you pay a corporate tax amount. Then the next step is you pay it out to your stockholders. But there's two ways you can do that.

One way is you can pay them a dividend, in which case they're taxed again at the dividend tax rate. The other way is you can put it into your stock and let it go up, and then people can sell it and get a capital gain, in which case they're taxed again at the capital gains rate.

So if you pay out money to equity holders, there's double taxation. This is why many people don't like the corporate tax system. They say, well look, it features double taxation. Because you're taxed once at the corporate level, taxed again at the individual level when that's paid out. And that level of taxation depends on how it's paid out.

Now, if you look at this chart, it raises the two fundamental mysteries of corporate finance. The first mystery is, why do firms ever use equity? Debt is massively tax favored. When you pay out debt, you don't have to pay the corporate tax. When you pay in equity, you do. Corporate tax used to be 35%. That's a big difference.

Why do firms not all debt? And so there's a large literature on that. And the fundamental answer comes down to the key distinction between debt and equity, which is debt requires fixed payments, equity does not.

When you take a loan, you have to pay it back. When you issue stock, you don't do anything. You don't have to pay a dividend. It doesn't even have to go up. I mean, you want it to, but it doesn't have to. So think of it this way.

Imagine that I gave you two choices for a grading scheme for this course. OK? In one choice, you do a problem set every week. And if you ever fail one problem set, you fail the course.

In another choice, I'm going to average all your problem set grades. And at the end, I'll rate you based on average how your problem set grades did. Unless you're risk loving, you prefer the second. Well, the problem is, debt is kind of like the first and equity is kind of like the second. Not exactly, but it's a similar feature.

So basically, now add on top of that the agency problem, which is that basically if the stock goes up or down, that is annoying or not annoying. If the company goes bankrupt, I lose my job. So I really care about making sure the company doesn't go bankrupt. I really care about making sure my debt holders get paid.

As a result, there is going to be a bias towards equity and away from debt. We can see this in an example. Let's go to table 24-1, the debt versus equity conflict. OK. You've got a company here that's worth $6 million.

In the first case, $1 million is held by equity holders and $5 million by debt holders. Now you have an investment. It's a coin flip. The investment is a coin flip, which is that it's 50% chance to win $3 million, 50% chance lose $6 million. 50% chance win $3 million, 50% chance lose $6 million, a negative expected value project. OK?

Think of this from the equity holders' perspective in the first case. If we make the investment and it hits, they get all $3 million. Why? Because we've already promised-- the debt holders can't make any extra money. They just get their interest payments. That's predetermined. The equity holders are the residual claimants. They get all the benefit from good luck.

Oh, let's also say-- I'm sorry. Let's say this company also regularly pays out a dividend of $100,000 a year. And these rates are 10%. So it pays out a dividend. The stream of dividends for this company is the present value of a million dollars. So the company is going to pay out a dividend of $100,000 a year.

So what happens, if the company goes bankrupt, to the equity holders? Well, first of all, they lose the future stream of dividends, which is worth $1 million. Second of all, they lose their investment, which is worth $1 million. So total what do they lose? $2 million.

So what do they want to do? Take the bet. Because from their perspective, it's win $3 million, lose $2 million. Now, the equity holders-- the debt holders, I'm sorry-- if the investment goes up, they get nothing. If the investment goes down-- let's see, what did I get?

What are the bondholders getting? They're getting an interest payment every period. They're getting an interest payment per period of 10%. They get $500,000 a year paid back no matter what the company does.

So what happens if the company goes bankrupt? They lose that future stream of $500,000 payments. That's $5 million. And they lose the $5 million investment. That's another $5 million. So they're out $10 million. So basically, bondholders are screwed. Equity holders make out.

Now, flip it in the bottom panel. Now take equity holders. Imagine $5 million of the company is in the hand of equity holders and $1 million is in bond holders. Well now, if the investment hits, gain $3 million.

But if it misses and the company goes bankrupt, they now lose $10 million. So they don't want to do the investment, and likewise, debt holders don't. So the bottom line is the share of the company that's in equity will affect its taste for risk.

So now you're a bank looking at this table and I come to you for a loan. which firm are you going to charge a higher interest rate to? These two firms exist. They want another million dollars. They come to you for a loan. Which one's riskier? Which firm are you more worried about? Yeah.

AUDIENCE: The first one, because they're more likely to take on risk.

JON GRUBER: Yeah, the first one's gambler's. I just want my interest payment back. I'm not trying to get rich. I'm just trying to get my 10% a year. I don't want these cowboys. I don't want to loan to these cowboys who are going to throw it away on crazy bets.

So I'm going to charge a higher interest rate. The higher is the share of the company that is in debt. What that means is there's now a trade-off. As I lever up, it gets harder to raise new money.

So that's why firms aren't all debt. There's a tax advantage, but there's a leverage disadvantage. The tax advantage is you don't pay corporate tax. The leverage disadvantage is the more leverage to the firm, the riskier they are. And it'll be more expensive to raise new financing. And that's why firms aren't all debt. That's the essential trade-off. OK? Questions about that? Yeah.

AUDIENCE: Why is the gain in the debt case still 0, even if they were making money on interest?

JON GRUBER: Why is the gain-- oh, it's 0 to debt holders because they get their $500,000 payment no matter what. They have signed a contract that says every year I'll pay you back $500,000. So if the firm becomes worth $8 billion, they don't get anything out of it. They still get their $500,000 a year.

So that's the point, is all the upside is held in equity holders. But the equity holders' downside is limited to how much the company they own. That's why the more is equity, the more risks they're going to take. Yeah.

AUDIENCE: Do you know about micro strategy?

JON GRUBER: I mean, there's lots of stories like this. I'm not even getting into scummy behavior here. This is just all legal. I'm not getting into Enron and stuff. This is legal stuff. Yeah.

AUDIENCE: So the more debt you're in-- or the more debt--

JON GRUBER: The more highly leveraged you are, the higher share of debt.

AUDIENCE: The higher share of debt the organization has, the less risk-averse it is, which makes it a less safe place to lend money?

JON GRUBER: It makes it a more safe place. I'm sorry, no, the less risk-averse it is. Yes, it makes it a less safe place.

AUDIENCE: It's a less safe place.

JON GRUBER: Yes.

AUDIENCE: And so they have to pay higher interest rates and that--

JON GRUBER: Offsets the tax benefit.

AUDIENCE: Offsets the tax benefit. Does that mean that even in a perfect credit market, this would occur?

JON GRUBER: Well, define perfect credit market. In a perfect information credit market, none of this is a problem, because basically I know everything before I make you the loan. So I would know that this investment is a loser and I wouldn't loan you the money for that investment. But in a realistic credit market, this is going to happen.

AUDIENCE: I guess my question was like, why couldn't a company always keep on borrowing and paying off creditors? Never mind.

JON GRUBER: Yeah, it's complicated. It's a hard example. But here's the intuition. The intuition is, debt is an action-forcing event. You have to pay up. Equity lets you slide. So basically, the more of your company that's equity, the freer you are to mess around and take risks that may not be healthy risks.

AUDIENCE: I think I just figured it out. That point about debt having to be paid, why isn't it that a company can keep on borrowing, paying off the original creditors, borrowing?

JON GRUBER: Because the new creditors will know then. The new creditors know. They're just going to-- if you keep borrowing and you lever up on debt, then basically, they'll know the total. Actually, in some sense, that's part of the problem we've run into with these corporate-- so if you look at-- what was the company recently that went bankrupt?

People didn't realize how much debt they had because they were borrowing from lots of different sources. And this is basically in some sense a little bit the story of FTX. But in general, basically the point is you're absolutely right.

If my new borrowers don't know about my old borrowers, then I can pay back my old borrowers with my new borrowers. New borrowers will not charge me. So this is assuming the new borrowers know what's in this table. If the new borrowers don't know this, then yeah, they won't charge a higher interest rate, and you can keep taking risks without them knowing. And that's sort of what happened with FTX, but in a more complicated way.

AUDIENCE: So the intermediate due dates on these payments are less of the important thing, because you could borrow and give--

JON GRUBER: Well no, it's a less important thing if they don't know. But in theory, they should know. In theory, there are rating agencies, which should be keeping an eye on you and saying, hey, you're pretty levered up, you're not rated this highly anymore. We're going to downgrade you.

AUDIENCE: Doesn't paying off your earlier debt lower your leverage again?

JON GRUBER: No, because you've only levered up to pay it off, so your total leverage is still high. So basically, that's kind of how we think about that first puzzle. Now, there's a second puzzle, though.

The first puzzle is why do firms do all that. There's a second puzzle, which is why do firms pay dividends? Remember, the capital gains tax rate is way below the dividend tax rate, because you don't have to pay it until you realize gains. You don't pay it at all if you die.

And the rate is actually physically lower. So the second mystery is, why do firms pay dividends at all? Now increasingly, they're not. Dividends are much lower than they used to be. But they're still quite large.

So why do firms pay dividends? Once again, the best answer is through the agency model. Well, in two aspects of the agency model. There's two answers here. There's an agency answer and a signaling answer.

The agency answer is look, we want them to pay dividends because we don't want them keeping their hands on all that cash and doing stupid shit with it. So for example, one study studied 25-- in 2002, if you took the 25 largest longstanding dividend-paying companies, they currently held $160 billion in cash.

If they never paid dividends, they would have had $2 trillion in cash. And cash sitting around makes people do silly things. They try to steal it, take risks, et cetera. So part of it's like, I don't trust the managers. I want to get out of their hands.

The other theory of why firms pay dividends, what's called a signaling theory, which comes back to our discussion just now. It's hard to know how well a firm's doing. But if they're paying you cash, they know at least they got cash. So it's a signal the firm's OK that they're paying these dividends. OK? So that's a couple of theories for why firms pay dividends.

Why is this relevant for taxation? It's relevant because one of the key debates over the last 20 years and going forward is how heavily should we tax dividends? If you look at this chart, if you go back to figure 24-5, you see that ultimately, the dividend tax affects the rate of return to investment. Because ultimately, equity holders pay it.

So in principle, if the dividend tax falls, that raises the return to investing in firms. That'll raise investment. So for many years, people have said-- in fact, this is why George W Bush cut massively the dividend tax rate.

He cut the dividend tax rate because economists were saying, look, that is a way to lower the cost of capital. That's the way to make investment more rewarding. Let's cut the dividend tax rate. What was wrong with that argument is you should understand why firms pay dividends.

And if you think about it, both the reason why firms pay dividends would say a cut in the dividend tax rate would actually want you to invest less. Think about it this way. Yeah, question.

AUDIENCE: Do share buybacks do the same thing, solve the agency problem?

JON GRUBER: Yeah, buybacks are a similar feature.

AUDIENCE: But they're not taxed, right? So why don't they just do buybacks?

JON GRUBER: Increasingly they are. But buybacks, the problem is-- right. Increasingly they're doing buybacks. The question is, why pay dividends at all? And I don't know the answer. I don't know the literature on dividends versus-- I guess you do have to take a finance course. I don't know the answer are dividends versus buybacks.

In fact, both the agency and the signaling models say that a cut in the dividend tax rate will lead to less investment. That's because dividends are wasteful in these models. So basically, dividends are simply a wasteful thing you're doing to either solve the issue problem or signal, right? They're wasteful.

So, if you cut the price of something wasteful you'll do more of it. You'll do more. You'll send bigger dividends because they're cheaper, et cetera. But the point is, if you're sending those dividends, what are you not doing with the money? You're not retaining it, using for investment.

So actually, by cutting the dividend tax rate, you're saying send more money to your investors. That's less money you're investing. So in fact, it's not clear whether cutting the dividend tax rate will raise investment or lower investment.

In the standard model, it'll raise investment, because basically there's a higher return to investing in companies. But in the alternative model, which is actually the only model consistent with the data, it could lower investment. So we don't know.

And in fact, there was a wonderful study done by an economist named Danny Yagan who noted that when George Bush cut-- when there was this massive dividend tax rate cut, it was true for C corporations and not S corporations. So very similar firms, which just by how they were labeled, got a very different tax cut.

So we could do a difference in difference study of how did the tax cut-- C corporations saw big tax change, big reduction in dividend taxes. S corporations didn't. Huge change, zero effect on investment.

So we paid out hundreds of billions of dollars in tax breaks to rich guys and got no increase in investment for it. And that is very helpful to think about why theory matters. OK? I'm a very empirical-oriented guy. It's why theory matters.

Once you understand the theory of why the hell firms pay dividends in the first place, you understand it wouldn't obviously lead to more investment. In a naive model of just, well, I look at this chart, it lowers the rate of return. But once you actually think about the theory, it's not at all obvious what it would do. And in fact, the answer is it did nothing. OK? Yeah.

AUDIENCE: What can the US government do if very big corporations don't pay tax?

JON GRUBER: Well, I mean, they could sue them. And they win sometimes. That was like GlaxoSmithKline. We won. We got billions of dollars in back settlements. But if they're not paying taxes legally, like Apple-- I mean, I don't know about this holy thing that lives in no country.

But the previous one, where they just actually were-- basically, you sue them, and you hope that your lawyers are smarter and can keep up with their lawyers. Essentially the way it goes. So that is all I really want to say about corporate taxation. Any other questions about that? Yeah.

AUDIENCE: Just to clarify, empirical data showed that there was no correlation?

JON GRUBER: That there was no effect of cutting the dividend tax on investment. So basically, Bush cut the dividend tax for C corporations, didn't cut it for S corporations, and yet patterns of investments across those two types of corporations were unchanged.

AUDIENCE: So it's more so just signaling?

JON GRUBER: Yeah, it's more we're just dumping money out to rich guys. So essentially it's giving a tax break to rich guys. That's something they were-- it's inframarginal. So once again, we care about marginal and inframarginal effects.

The marginal effect-- well, gee, can we get more investment by cutting the dividend tax rate? The inframarginal, I'm giving away money to people who are getting dividends anyway. And the answer was all inframarginal, no marginal. Now, is that good or bad? That's an equity question. But we know that the dividend holders are rich. So it's certainly bad from an equity perspective. OK?

Now we're going to start the last chapter, where we tie this all together. This is very important and exciting, because once again, I like when we integrate things. We're going to really be able to tie together all the stuff we've learned in the last six chapters into one tidy package and talk about what we should actually do about taxes in the US.

So please, if you can it on Friday, I really urge you to figure out a way to be there, because this is a fun discussion. We'll start today. We'll continue on Friday. OK? So I want to talk I want to start with a story of a guy named Herman Cain. Any of you guys know who Herman Cain is?

Herman Cain founded Godfather's Pizza, and he ran for president in 2012. And he was a silly character. But his big platform was 9-9-9, he called it. He said, we're going to get rid of all this complicated tax system, have a flat tax. It was a 9-9-9 plan-- 9% corporate tax, 9% income tax, 9% sales tax. Everything else is gone.

None of this million pages of tax forms, none of this conflict, none of this-- all that stuff. Just a flat tax. It was actually incredibly popular. It got pretty far on just 9-9-9. He got pretty far.

And actually, there's a long history of people proposing that we just scrap our current tax system with a flat tax system. Now, we actually got fairly close at one point. The holy moment, the golden moment for public finance economists and tax policy was in 1986 under a Republican president.

Republican and Democratic senators locked themselves in a hangar at an Air Force base until they hammered out a tax deal. And the fundamental feature of the tax deal was to massively overhaul the individual tax system. Before 1986, there used to be 15 tax brackets, with rates ranging from 11% to 50%.

There was also all sorts of loopholes in the tax system, all sorts of violations of Haig-Simons all over the place. In 1986, they said, we're going to take these 15 brackets and make them three brackets-- 15%, 28%, and 33%. Capital gains are now regular income. No more IRA deductions.

We are going to go to Haig-Simons with a much flatter tax system. And economists cheered. This is what we want. Basically, a flat, broad tax system is the most efficient way to collect taxes. Now you lowered the top rate.

So you could dispute whether the top rate should be 33% or 50%. But it was a much more efficient tax system. However, it did not last. Starting in 1993 and then again in 1997, then again in 2001, 2003, 2012, 2017, we kept messing up the system. So now we have our more complicated system again.

So basically the question is, what is the advantage of a simpler, flatter system and can we get back there? What are the barriers to getting back there? I'm going to argue there are advantages. What are the barriers to getting back there?

And there's really advantages in three areas. There's three fundamental reasons why a simpler, flatter tax system helps. The first reason is tax evasion. We've so far talked about tax avoidance, doing legal things-- at least borderline legal things.

There's also straight tax evasion, literally just cheating-- just not reporting your income. Now, there's lots of fun examples of this. So the CEO of Brockman Incorporated-- I'm sorry, Reynolds and Reynolds Incorporated. They make tinfoil and stuff.

He hid over 20 years of capital gains income through secret bank accounts, managing the largest tax fraud case ever for a US citizen in 2020. He backdated records and used code words to conceal the movement of his money to entities in the foreign jurisdictions of Bermuda and Nevis. And then he and his co-conspirators settled for the Justice Department with $130 million in back taxes. But it wasn't nearly as much as he'd stolen.

Now, the rich are not the only ones who cheat on taxes. We have something called-- in the US tax system, there used to be deductions for the number of children you have. Now we have a child tax credit. It used to be a deduction for each of your number of children.

Before 1986, you just listed how many children you had. Starting in 1986, as part of the tax form, you had to list the kids' Social Security numbers. When they did that, 6 million kids in America disappeared.

My favorite example, actually, internationally is Greece. Other countries have a hard time. Other countries, much more of the economic transactions are done under the table. So it's hard to measure income and wealth and tax it. So they tried to do clever things.

Remember the window tax in England? Well, Greece had a pool tax. They noticed that people with private pools are more likely to be wealthy than people without private pools. So what they did is they'd literally fly helicopters over and find out who had a pool and tax them more.

Well, people got wise to this. Basically, people developed pool covers that could fool the tracking, could fool Google Earth. So in the wealthy suburb of Kifisia, there were estimated 324 people reported having a pool. The true number of pools is estimated 17,000 pools. So 324 out of 17,000 pools were found and reported.

So basically, there's a lot of people do a lot of stuff to avoid paying taxes. Why do they do that? Well basically, as always, they're trading off the costs and benefits. So let's go to the first figure in chapter 25, which is a model of optimal tax evasion.

Remember, we model everything, from love to marriage to tax evasion. And we always do it trading off costs and benefits. So let's think about the cost and benefits of cheating on taxes. Well, let's imagine a model.

What is the benefit of cheating on taxes? Well, for every dollar of tax you cheat, you save tau cents. So the marginal benefit is a flat line at the marginal tax rate. So let's start with the marginal tax rate of 50%. Let's say there's a 50% marginal tax rate.

The marginal benefit MB1 is just a flat line at $0.50. That's the marginal benefit. What's the marginal cost? The marginal cost is going to be essentially the penalty you pay if you get caught.

So if the idea is that basically both the odds of getting caught and how heavily you're penalized rise with how much you cheat, you have an upward-sloping marginal cost curve. So if you cheat a little bit, there's no cost, because they're going to ignore you. But as you cheat a lot, the odds you get caught get higher and the amount you have to pay gets higher, so marginal cost is going to rise.

Now, basically what that means is what will determine how much-- that means there'll be an optimal amount of cheating. The optimal amount of cheating is where marginal benefits equal marginal costs.

So in this example, people evade an amount which is where the expected damage from being caught equals the benefit of cheating. What does that mean? That means that two things fundamentally determine how much you cheat. The first is the penalties and odds of getting caught.

That's the MC curve. So if you increase penalties or increase surveillance of taxes, that will raise marginal costs. That will induce less cheating. OK? You move from E1 to E2. Because once again, it's a cost-benefit analysis.

On the other hand, if the tax rate goes up for a given set of penalties, that increases cheating. Because the costs are fixed, the benefits have now risen. So what that means is another reason besides Haig-Simons why we like low tax rates is it reduces the incentive to cheat.

The higher the tax rate, the more incentive there is to cheat. Now, in fact, in the US, we estimate that currently about $630 billion-- about 3% of GDP is our tax gap. That is, there's $630 billion not being paid in taxes that should be paid in taxes. That's pretty similar to other developed countries. Sweden is about 10%.

But developing countries don't do very well in this measure. Pakistan has a tax cap of 70%. A recent study in other developing countries have this sort of thing. In Greece, the tax cap is 90%.

And there's actually a fun story of why, which is that basically-- it's a great historical perspective on this, which is basically, for a long time, Greece was occupied by the Ottomans. They hated Turks.

And basically, the Ottomans tried to tax them. So a view of patriotism was to avoid paying taxes. And it sort of stuck. This is kind of like Daron's work on institutions, that once things become a nation's culture and institutions, they stick. So Greece has a long and valuable history of not paying taxes that result in a 90% tax gap. Now, what can we-- question.

AUDIENCE: What's the average-- in terms of dollars, what's the average that you can get away with?

JON GRUBER: This guy, man. Am I going to go to jail for even teaching you? So basically, I do not know that answer. And if I did, I would not tell you. But basically, here is the interesting evidence on it.

So there's actually some really good evidence, which is that basically, there's an incredibly high rate of return on this. And there's a really cool new study by my colleague Nathan Hendren.

So the IRS randomly audits people. So there's actually data on how much people cheat. So that deters cheating a bit. But it's sufficiently random that it doesn't deter cheating that much, because it's odd you'll get audited.

But they do. And they make that data available to researchers, if you go through 18 secret doors and stuff like that. So they use this to assess. And they used variation in the enforcement IRS spent on trying to go after people to assess what is the marginal return to a dollar of IRS spending to try to get people?

So each dollar of IRS spending to try to collect taxes, what do you get back in taxes? What they found is on average, you get about $3 of revenues for every $1 of enforcement payment. So it's a massive increasing rate of return.

So already we're massively underinvesting in collection. Here's a striking fact. There's a huge income profile, which is the rich are the ones who cheat. And why are the rich the ones who cheat? Because it's hard to cheat if you're just a working Joe.

Because remember, your income is just reported right to the IRS. Let's say your income is just from your job. How are you going to cheat? They're just going to report your income. Now, you could lie about how you give to charity. But that's not a first order way to cheat.

So at the bottom of the income distribution, the return to enforcement is closer to dollar for dollar. There's still some gain, but it's not a lot. At the top, it's $12 to $15 for every $1 you spend on enforcement.

So there is an unbelievable rate of return to this activity. However, it is very hard to get investments in the IRS. And I saw this firsthand when I arrived at Treasury in 1997. In 1997, they had a huge set of hearings about abuses at the IRS, our tax authority-- about abuses at the IRS.

And basically what happened was they had all sorts of people testify about how the IRS had made their lives miserable. So a New York priest spoke of being hounded by the IRS to pay taxes he didn't owe. They found one man who committed suicide after a battle with the IRS.

People came with bags over their head to testify. It was a big deal. And the IRS was massively overhauled. And they massively cut back the IRS tax enforcement because of these. And basically we've learned two things since then.

Every single one of them were lying, that every single one of those cases actually legitimately owed the taxes that they were found, and they were just trying to avoid tax. And the IRS caught them and was punishing them. So that was the first.

So there was no systematic abuse of any of the things. And a year later, they set up a watchdog agency to investigate every complaint of harassment by an IRS agent. They investigated 830 complaints. Zero were found to have merit. So first of all, it was all BS.

Second of all, by cutting the staff, we saw massive erosion in tax payment in the US. So basically, the IRS staff fell by 22% and the audit rate fell by 40%. So essentially, because of this public hearing, we massively cut back the IRS. And that is why we have these incredible opportunities.

And in fact, the Inflation Reduction Act was actually the first major investment in tax enforcement in US in a long time. This Reduction Act included tons of spending, which is actually a massive money raiser.

So the Inflation Reduction Act was mostly focused on climate spending. How did they pay for that climate spending? Largely by collecting more taxes that people owed. But here's what's striking. Once again, sounds so simple when I say it, but there's a large political constituency against IRS enforcement.

It's actually incredibly controversial. It would not be surprising if the Trump administration cut back this funding. That is insane. OK? Let's be patently clear. The money they collect is largely-- think about why tax enforcement is the best possible policy, OK?

Tax enforcement that returns more than it-- assuming we're not harassing people. Let's leave that aside. Tax enforcement that returns more than you collect as a rate of return, why is it a great policy? First of all, it's a positive rate of return government activity.

Second of all, it increases tax efficiency. Why does it increase tax efficiency? Because you broaden the tax base and people don't spend their time trying to cheat. Third of all, it increases equity because it's the rich guys who cheat.

So basically, there is no argument against increasing enforcement spending, especially at the top of the income scale. But somehow people kind think the IRS is some bad guy. And so it's hard to get that through. So that's been controversial. Yeah.

AUDIENCE: Why did the trials have any lasting effect? I can't imagine it was because the government had--

JON GRUBER: It's because people hate-- so in some sense, there's actually an industry set up around people hating taxes. Let me explain what that means. I'll actually come back to that in a minute.

But the bottom line is, many people have an incentive to get the government people to hate taxes. There's a large set of people who make people hate tax. And I'll come to more reasons why people legitimately do hate taxes. And this just fed that argument and led to change. Why does any hearing do anything? It's public outrage. Yeah.

AUDIENCE: If someone cheated like a long time ago, is there a time frame in which you have [INAUDIBLE]?

JON GRUBER: I do not know what the statute of limitations is, actually, legitimately. I'd tell you if I knew. I don't know. OK, so that's one argument. Can we actually do a thing? Can we start a collection for this guy's bail? Can we start a collection?

OK. So I said three arguments for a flatter tax system. First is less cheating. The second is simplicity. The tax code comes to-- the question was asked here about why did the hearing matter. The tax code is super ugly and confusing.

So if you look at page 25-2, this shows the number of pages in the individual tax return. So when you go to pay taxes, in 1960, you got a document with 16 pages. In 2017, you got a document with 217 pages. 217 pages.

So the estimate is the average simple basic Joe filing taxes spends about $260 in forgone time filing those taxes. One study estimated that in 2000, taxpayers spent 3.2 billion hours, an average of 26 hours per tax filer.

It's like having 1.5 million government employees in the US, if you think of it that way. If you think about it, that's a pain. People don't like it. That's part of why they don't like taxes. It's super annoying. And a simpler tax code would simplify that.

Basically, one of the appeal-- when people talk about why a flat tax they like it, it's the flatness people like. But the idea is, you're going to have to pay taxes on a postcard. We're going to send you a postcard. It's just going to say, fill in your income, fill in your sales, fill in whatever.

And boom, you send it back. None of these complicated provisions, none of that stuff. OK? Very appealing for many reasons. However, we have to recognize that simplicity comes at a cost. And let's take a simple example.

I've been harping on the fact that we should include in your income your employer contribution to your health insurance. That would be good for both equity and efficiency. But it would be bad for simplicity, because then you'd have this complicated thing of figuring out how much is your health insurance worth? How do I put it in my taxes?

It's doable, but it's a complication. The point is, there's a trade-off. The simplest tax system is probably not optimal. The question is, could we make the tax system a lot simpler? Could we make the tax system a lot simpler than we do? And would that make taxpayers feel better about paying taxes?

Now, here's another thing. We talk about the politics of taxation. What other countries do is they make taxes much easier, which is they pre-fill your tax form. So in Scandinavian countries, you get a form that says, here's what we think you owe. Check it out. If it's right, sign it.

And for most people, that's pretty easy. Like I said, most people have fairly simple tax forms. It still takes 26 hours to do it because you have to read through the documentation. You're confused. But actually, the truth is, it's super easy. So why don't we do that in the US? Why don't we do that in the US? Who's stopping that?

AUDIENCE: Turbotax.

JON GRUBER: TurboTax and H&R Block are stopping that because they would go out of business. So basically, there's actually been many bills to simplify how we pay taxes in the US that are blocked by the industries that have now made money off a complicated tax system. So once again, the complications we talked about in chapter 9 rear their heads again. So that's the second argument for why we want flatter, simpler taxes. Yeah.

AUDIENCE: What are their arguments for why this shouldn't happen?

JON GRUBER: I don't know. I think they do it all behind the scenes. They're not out there advertising, we should have a complicated tax system. They do it all-- they just give a lot of money to politicians who oppose it. OK?

So that's the second argument. The third argument is where the economics gets most interesting, which is that a simpler, flatter tax system would be much more efficient. And here we come to, in some sense-- I hate to say it, but in some sense, while chapters 21 and 22 and 23 were kind of fun and interesting, at the end of the day, it's not clear how much they matter.

Because at the end of the day, what really matters is when you raise taxes, how much money do you get? And we can think about how it affects labor supply and savings. That's kind of interesting. But ultimately for public efficiency, we just want to know how much money you get.

Well, how much money you get when you raise taxes is going to be a function of five things. The first is what we might call the direct effect, which is if I earned $100 and you raise my tax rate by 10%, you get $10. That's the first effect. That's the easy part.

But there's actually four indirect effects that offset that-- four types of indirect effects that offset that. The first is what we call the gross income effect, which is what we call the Laffer curve, which is basically, when you tax me more, I might work less hard. I might save less.

Now basically, our understanding of chapter 21 and 22 suggests that it's not going to be very big, because remember, we said overall labor supply is very elastic. We don't have any evidence on how elastic savings is. But that's the first effect. It's going to turn out to be the least important.

The second effect is the reporting effect, which is when you change the tax rate, that creates incentives for me to change the way I report and classify my income. It really should be called a classification effect. Let's call this a classification effect. That's a better name for it. The classification effect.

Hey, Paul, can you send me an email to change that in the book? So basically what that means is-- so here's a simple example. Suppose your employer says, look, here's your choice. I can give you $5,000 raise or $5,000 in health insurance.

And let's say that health insurance is worth $3,000 to you because you're healthy. So your employer is paying $5,000 or $5,000 in health insurance. If your tax rate is 25%, you say, well, the $5,000 raise, I take home $3,750. The insurance is worth $3,000. I'll take the raise.

If your tax rate is 50%, you say, well, now I'll take the health insurance. So by raising tax rates, we've suddenly taken money out of the tax system. Suddenly we have money that was taxable to nontaxable. So that's the classification effect. Essentially, we've created an incentive to reclassify money in nontaxable ways. Totally legal. All of it is legal so far.

The third is the income exclusion effect. The income exclusion effect. The income exclusion effect, which is it causes you to take advantage of all the tax breaks. Basically, the higher tax rate is the more you're going to take advantage of tax breaks, charitable giving, mortgage deduction, et cetera. Basically you take those the more the higher tax rate is.

And then finally we have the compliance effect, which is people cheat more when the tax rate is higher. So all of these offset the direct effect. The point is, all these indirect effects mean that you will raise less than you think from taxation.

So let's do an example to illustrate this. OK? Let's take Nala here in figure 25-4. Nala has wage income of $45,000. She has a job with $45,000. She also on the weekends mows lawns and makes $5,000.

So she has a total income of $50,000. And let's say there's a 10% tax rate. So we raise $5,000 on her. Now let's say we raise the tax rate from 10% to 20%. And let's say Nala responds in four ways.

First of all, she stops mowing lawns. So $5,000 goes away, because she doesn't want to do it if she's only paying 80% of the money. Second of all, she decides to start taking health care at her job. So $2,500 of the money goes away.

Third of all, she decides to start giving to charity, so another $2,500 goes away. By the time you're done, her reported income is only $35,000. So you've doubled taxes, but you've only increased tax revenues by 40%, from $5,000 to $7,000.

This is essentially the implications of the general point that the tax base is elastic. And fundamentally what we care about is what is DB D tau. How does the tax base respond to taxation is going to determine the ultimate efficiency of taxes.

Ultimately, in the extreme case, if Nala literally stopped doing anything, when the tax rate went up, you would raise no money. That's what we call the wrong side of the Laffer curve. But it's not-- or if she suddenly started reporting health insurance of $40,000, you collect no money.

That's not what Laffer spoke of, which is people working less hard, but it's the same effect. Which is these indirect effects poke holes in the tax base. And as a result, what that means is that when you raise taxes, you don't raise as much money as you think, because there's these offsetting indirect effects. Questions about that?

So what that means is that this is essentially a way to quantify the Haig-Simons point. Well, no, scratch that statement. This is a way to quantify the deadweight loss of taxation. We talked about deadweight loss in terms of reducing labor supply or reducing savings.

But ultimately the deadweight loss is really, how much less money do you raise than you think you were going to raise? It's something that economists are now-- economists' thinking has changed about this.

We've moved from talking about deadweight loss to talking about what we call a fiscal externality, which is how much does it cost the government to do an action? Here we raise taxes. The fiscal externality is, how much less are we raising because of these various activities?

These various activities are creating externality on the budget, which instead of raising $5,000, we're raising $2,000. That's a negative $3,000 externality from these activities. So move to thinking about it that way.

And that is actually quite a nice framework because it's a lot simpler. We just ask ultimately, the efficiency of a tax system is ultimately determined by the fiscal externality. How much less do we raise than if people just didn't respond? And that's kind of the way we're thinking about it now. OK? Yeah.

AUDIENCE: What is the baseline for this always? Is it the current tax system?

JON GRUBER: Great question. Actually, let's start with that. I'm going to stop now because I want to riff for about 10 minutes and I don't want to break it up. So basically, let's come to that next time and bring that question back next time.