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ARNAUD COSTINOT: All right, thanks all for coming. So I'll be talking today about tariffs. This is based on some joint work that I have with Andrés Rodríguez-Clare at UC Berkeley. The bulk of it is going to be mostly normative, so are tariffs good or bad? And how do we know, using data, whether they are?

But what I thought I would start with is some very brief overview of what US tariffs have looked like over the years. So let's start with the historical perspective. So this is starting in 1790. This is plotting the average tariff in the United States. There are two lines here. The blue one, you can forget about. This is setting aside goods on which tariffs are necessarily zero.

And you can just look at total imports to get a sense of the magnitude of the average tariff in the United States. And so you see roughly three periods. Period 1, up to 1860, so tariffs are pretty large. And actually, they account for a very large fraction of federal receipts. That's about 90% of tax income coming from import duties.

The next period is one where I introduced domestic taxes. We introduce income taxes in the United States. Tariffs becomes much less important in terms of tax revenue. And most of the tariff variation over that period, most of the rationale for tariffs over that period is reducing trade, trade protection, lobbying, affording protection to particular sectors.

There's of course, the 1930s, the Great Depression, there's a peak in trade protection. And what you see after that is what Irwin referred to as tariff as a reciprocity, where the US is going to offer tariff cuts to its trading partner in exchange of tariff cuts for its products on other foreign markets. So tariffs were large, they were high. And they dramatically decreased in the post-World War II period.

So this is up until 2018. So remember, you start in 2018, we were around 2%, so tariffs are very low in the United States when we have the first Trump administration. And then there's a series of tariffs that are implemented on solar panels and washing machines, steel, and then a big chunk of them targeting China.

And so if you want some rough, back-of-the-envelope, that's about 20% of US imports, the Chinese imports. And they're going to be subject to a 20% tariff. So you're in the ballpark of 4%, in terms of the average tariff in the US. That was starting from a peak in 1930 of 20%. So 20%, that's the Great Depression.

We go down to 2% pre-2018. And we go up to about 4%, 5%. OK. Now, fast forward, this is what the last year has been about. Start with the red line, that's the statutory tariff. So again, we start from around 4%. And now we reach heights that we haven't seen since the Great Depression, OK?

So those tariffs are much larger, in part because if you look at the Liberation Day, some of the tariffs that are being imposed on China, they're going to go all the way up to 140%. The base also is expanding. We're talking about tariffs that are imposed on all countries of 10%. And so that's how you reach such heights.

There's an interesting issue about the statutory versus the actual rates, that there's a lot of exemptions that we didn't realize actually, that there were many ways for those countries not to pay the tariff, and they're using those, which means that, in practice, the applied tariffs are lower than the statutory ones. And I'm happy to discuss a little more why.

But the big picture of it is that we're back to levels of trade protection and tariffs that we hadn't seen since the 1930s. Where are we going to go from there? I have no idea. I suspect few people do. Is the Supreme Court going to strike down some of those tariffs? Again, not my area of expertise, so I'm not going to try to make predictions about that.

But what I'm going to try to do here is to walk you through how we think about whether tariffs are good or bad. And again, trying to combine both theory and data to make progress and shedding light on these questions. So Question 1, what's always bad about tariffs? So what's the standard case, the reason why economists think that tariffs are bad?

And so for that, I think actually it's useful to first think about the case without tariffs and the reason why, actually, economists think that trade is good. So I want to walk you first through the case where there are no tariffs and try to understand why there are gains from trade. So here's a simple, partial equilibrium diagram. So we have quantity on the x-axis, prices on the y-axis.

Think about, if you want to fix the idea, some good maybe there, Barbie dolls that we could produce ourselves or perhaps, down the line, import from some other country like China. So this is the supply curve. So that reflects the marginal cost of producing those dolls. That's the demand, which reflects the marginal benefit. If we couldn't trade, if we had to produce the dolls for ourselves, then in equilibrium, supply would have to be equal to demand and that would be the price.

Now, suppose that I get, as a country, afforded the possibility to trade with the rest of the world at some lower price. So China comes around, now I can buy those dolls from China at a lower price, P star. What's going to happen? The price is going down, so consumers are going to buy more.

The price is going down, so US producers are going to produce less. So that's the new output level. And the difference between consumption and output, of course, are the imports into the United States. So how do we think of international trade? So that's our free-trade equilibrium.

The very deep idea here, I think, when thinking about international trade is that it really is just like technological progress. So, conceptually, when you think about international trade, you should think about it just like any other way for you to produce-- yes, you could use raw materials, workers, in the United States, to produce a doll. But you could also decide to produce something else and exchange it for a doll.

That's another way for you to deliver those to US consumers. That's a form of technological progress. And so, graphically, I think what's nice is that you can think about this as, OK, that's my technology, my domestic technology. That's my marginal cost if I was using US firms in order to produce those dolls. But when I'm open, when I can trade with the rest of the world, I have another way of getting the dolls to my consumers, which is just buy them at price P star.

How should I do it? How should I combine those two technologies? You can see here the lower envelope, that red curve, I should produce up to this point where my marginal cost is equal to the world price. And then I should stop using my own technology because the right way, the efficient way of producing the doll, is actually just to import them. And so you see that very graphically, that that's technology without trade.

And now the lower envelope is technology with trade. That's technological progress. So now if you think about evaluating the magnitude of the gains from trade, also you can read that very easily from this picture. I told you this is [? adjust ?] changed technology. So what's the value of that? Well, the value of that is that there are some dolls that we were consuming in the United States, now the cost is going to be lower.

The cost was that before. In the absence of trade, we were using our own technology for each of those units. Now we're paying the world price. And it's less than the marginal cost in the United States. So that's that first triangle here. In the absence of trade, we would have consumed those dolls, but we would have paid more. And now we're saving some money.

The other thing that's happening is that because those are getting cheaper, we're buying more dolls. And that's that other triangle here. All consumers in the United States are getting access to dolls that they wouldn't have purchased otherwise at a lower price. And the whole thing, when you integrate, that gives you this green triangle, the gains from trade.

One thing I like about that picture is that it's very partial equilibrium. I'm talking about dolls, but that's the economics of it. Very generally, that's just the story for the gains from trade. Actually, one way to look at it, also, is to say, OK, the difference I told you between those two things, that's the level of your imports.

So one way, if you turn your head, you can think about that triangle also as, OK, that's the import demand curve. And the triangle is the area under the import demand curve. And that's very generally, the way to think about the gains from trade. And I'm going to come back to that towards the end. What's going to matter for how big they are is going to be how much we trade and how elastic is that import demand curve.

So that's the case for trade. So trade is like technological progress. You're open to trade, it's like getting access to this new technology with a standard benefit. What's the problem now, when we introduce a tariff? So think of the tariff as, all of a sudden, my consumers, my firms in the United States, they're not going to face the price P star on the world market, the price that those Chinese producers are receiving.

They're going to face that plus the tariff. And here for simplicity, I'm thinking about the tariff in specific terms. This is in dollar terms. So instead of paying $30, if the tariff is $10, you're going to pay $40. So what's going to happen? You raise the price faced by firms, they're going to produce more. You raise the price faced by consumers, they're going to consume less.

And both things are going to lead to a reduction in imports. So that's what's going to happen to the price and what's going to happen to the quantities. Why is it that we don't like it? Again, think about it as, trade is like a new technology. I'm distorting the way you're using that technology. You're not going to use it properly.

And you can see two issues with the tariff. One is that little triangle here. What that little triangle here is, remember, I had this way for those units, of producing them by importing them at a price, P star. But now because you've decided to impose a tariff, you've incentivized the firms in the US to actually produce them. So we're using the wrong technology.

These are those that we would have consumed. That's not the issue. The problem is that we're producing them the wrong way. That's the production distortion. That's the first triangle here. The other thing that's happening is that, well, because the tariff is affecting the prices at most US firms and US consumers are facing, we're also changing the behavior of our consumer and creating another triangle.

So the problem here is that because of the tariff, we're consuming less. But the marginal benefit on all those units, that's on the demand curve here, that was strictly greater than the true marginal cost, the world price. So these are units we should have been consuming and we're not consuming them. And that's the problem.

So a tariff is a tax. The tax creates a wedge. And the wedge implies some distortions that are summarized by these two [INAUDIBLE] triangles. So that's the basic case for-- don't impose tariff, the distortionary, and there will be a welfare cost associated with them.

So what's potentially good about tariffs? In a way, there's something very deep about what was said, but also slightly misleading. I am telling you that tariffs are distortionary because I'm starting from a situation where there is no distortion to start with. There was an invisible hand of the market, Laissez Faire was efficient.

So any wedge that you put in has to backfire and create a welfare loss. But what if, initially, there was a problem with your economy? So this is where we're entering tariff as a second-best instrument. In principle, tariffs could be used as a tool for efficiency. So suppose that distortions exist to start with. Then, I'm going to show you tariffs could help correct them.

Why do we think there may be distortions? Here's a non-exhaustive list. Knowledge spillovers, maybe production, employment in particular sectors is too small because firms don't internalize the fact that if the sector, say, a semiconductor, was to grow, all firms would get more productive. Maybe there's imperfect competition, unemployment, again leading to some sectors being too small.

There may also be geopolitical risks. So when you think about externalities, maybe there's something about the rest of the world that I care about. I care about a geopolitical action that some other countries, say China, may take. And maybe my firms don't internalize the fact that when they do foreign direct investment, when they transfer technology to China, or maybe when they don't produce enough semiconductors in the United States, this is influencing that probability of geopolitical action.

And as a government, I may want to take that into account, step in, and do something about it. Think also about carbon emission. Maybe when consumers in Europe are buying beef from Brazil, it leads to some trees being cut in the Amazonian. That leads to some carbon emission. Are European consumers taking that into account? No, probably not.

As a government, I may want to step in, let them internalize the fact that each unit of beef imported from Brazil is going to have some marginal effect on carbon emission, and one should pay for that. OK, so here's the way to think about it graphically. So this is our free-trade equilibrium again.

Now, the only twist that I want to introduce is to think of a wedge now, to start with, between what's the private marginal cost and the social marginal cost. So here, this is a situation where output is better than the firms are thinking. Maybe you produce more semiconductors. We all get more productive. Or maybe it helps with some geopolitical risk.

For our purposes, let's just think that private marginal cost is strictly higher than the social marginal cost. So now I'm in a situation where, really what should be the optimal level of production is here, not there. At that point here, the social marginal cost is not equal to the world price at which firms could sell their product.

So in this case, suppose that we impose a tariff. On the consumption side, nothing changes. I'm raising the price. I'm incentivizing my consumers to consume less. They were doing the right thing. So nothing is changing there. But there's an upside.

Now that I was starting from a situation that was distorted, I'm incentivizing my firms to produce more. That movement in output now is a positive. And that's given by that triangle right here. On all those units, if you want, we were not using the right technology. The right technology was us producing, because we have a very good technology.

The problem is that firms don't recognize how good that technology is. So they don't realize that producing more semiconductors, say, would be very good for the US. So if you have distortions to start with, then a tariff, by affecting the incentives of firms and consumers to produce, could potentially help.

The other motive for tariffs, just like for any other tax, it's not about efficiency, it's about redistribution. So what you may want to do, think again about what the tariff does, at some very basic level, is it creates a wedge between prices in the rest of the world and prices in your home country. So as a country, as a government, if you impose tariffs, you can play with those domestic prices.

And what's the potential upside of playing with those domestic prices is to create these pecuniary effects that are going to lead to some redistribution affecting the income of some versus others. So think about some pie that you have to share. And you can decide who's going to get a bigger share.

Are these going to be producers or consumers? Are they going to be high school graduates versus college graduates? Manufacturing workers versus other? In my example, at the beginning when I talk about Barbie dolls, it's not clear that imposing a tariff on Barbie doll is going to do anything to the distribution of real income in the United States.

But if you start slapping tariffs across the board on manufacturing goods or on agricultural goods, it's conceivable that this is going to have an effect on people in manufacturing versus others, or farmers versus others. And so that's one potential upside of the tariff. So there's another way, again, to use that picture to see that.

So again, back to our free-trade equilibrium. We're going to bring back the tariff. And we want to see what are those redistribution effects. So the distortion is as before. Now, there was something also implicit in what I was doing in my first picture, which is $1 is $1 is $1.

What's the social marginal value of a $1 to the firm versus $1 to the consumer versus $1 to the government, $1 to a worker in this industry versus that industry? Do we care or do we not care about those transfers? When I showed you the distortion, there was a bit of me doing some philosophy of saying $1 is $1 is $1.

I'm not taking a stand on that. Here, I'm telling you, OK, I might. I may care about giving money to producers versus consumers. And the tariff is a way of doing so. The other thing that the tariff is going to do is, that rectangle that you see, that's also a transfer. That's from the consumers to the government.

They're paying the tax. There's money coming in for the government. And there's a question of how much we care about this. Something, I think, again, is insightful about that sort of picture is that it rightly gives you a sense of the magnitude that when you're thinking about distortions, and so the aggregate welfare cost if you wall off trade protection, these are triangles.

The fact that they're triangles means that they're second order in the size of the tariff. The redistribution is not. The redistribution is first order. It looks like a rectangle. So whenever you talk about trade protection, the aggregate welfare loss, they're going to tend to be much smaller than the redistribution effects that are happening in the background. And that's something that you already see here in this picture.

One thing also that I've kept under the rug so far, but that's potentially important, is issues of international redistribution. And so maybe that's something that's much more specific to international trade than public finance. When I tell you tariffs, there's an efficiency and redistribution money, this is textbook public finance.

Here, this doesn't quite sound like textbook public finance, because there's something special in an international context, which is that, very often, the government imposing the tariff may have very different preferences on the domestic consumers and the domestic firms versus the foreigners, those that are in the rest of the world, that they may care much more about who's here inside the United States versus who's outside.

So one potential upside of the tariff in this context, think about it this way, that whenever you're imposing tariff, everything else being equal, you're reducing the demand for the goods that you're importing. So at that same original price, you're going to shift down the demand for those goods from abroad. I've shown you, the imports is shrinking as I am imposing a tariff.

Consumers are going to buy less. Firms are going to produce more. And as a result, we're going to buy less from the rest of the world. So imposing a tariff, holding prices fixed, shifts demand down. Now what happens when you shift demand down, typically, we would expect the price to adjust. Supply has to be equal to demand. If there's a negative demand shock, the price will have to adjust downward.

If it does, that means that the foreigners are at least partially paying for the tariff. So graphically, again, that's our free-trade equilibrium. I put the tariff. You can think about it in this way, that there's no reason, really, why the price at the border that, say, those Chinese producers of doll are charging me should remain the same.

It's conceivable that as I impose a tariff, because I am shifting down my demand for their products, their price will have to adjust downward. They have to find a way. Of course, if they have some other outside option, if you can just drop the doll at the same price, nothing is going to happen. But maybe they have to find a way to sell these dolls. And so we would expect the price to go down.

Now, suppose that you do the same welfare analysis. OK, what's new here in this picture? There's a new rectangle that has just opened up. And what's that rectangle? We used to pay P star. That was our way of using international trade. That was the cost of getting those dolls.

But now we're paying P star prime. That's lower. OK, that's good news. On all those units, we're now paying less than before. And that's obviously a pure transfer from foreigners to home. And on all those units that we're importing, we're paying less than before. This is good for us. This is bad for them.

So there are, again, pecuniary effects, but they happen on different sides of the border. So that's a very, very old idea. So John Stuart Mill, Edgeworth have been talking about this as the classical, optimal tariff argument. So as a country, you may have some market power, some monopsony power, when you buy, some monopoly power when you sell. And you may want to take advantage of that.

And if you do, you could make yourself better off, of course, at the expense of making the rest of the world worse off. Because that's a transfer. You're buying, they're selling. The reason why it's a benefit for you is just that you don't care about others.

One thing I should also say, very often when we present this, and I think this is more for historical reason and when the different theories were developed than anything else, we have-- and that's the way I've suggested things to you-- a tendency to think about it as it's very neoclassical. There's supply and demand. And I drop demand and the price is going to adjust downward.

And whether or not you can actually drop the price depends on how big you are on the world market. If you're tiny on the world market, I don't think you can. But if you're big, that's a big enough demand shock that the price could adjust downward.

I think there's another way to think about those terms of trade consideration, which is more, look, I mean, I'm tiny, but maybe those foreign firms, they have market power. They're imperfectly competitive. They charge markup. There's pricing to market. And the question is, if I were to slap a tariff on them, would that affect the way they charge me different goods, the markups that they charge to me?

It's conceivable that when you raise their cost, there would be incomplete pass-through of the cost, that part of it would be a reduction in their profit margin. So you could be tiny, and yet you would have an impact on the profit margins of those foreign exporters. Conceptually, that would still look like a rectangle, so potentially a broader rationale for this thing.

So let me step back. So I've given you the classic case for the gains from trade, why introducing tariffs as a wedge may create distortion. I've also told you, well, if there were distortions to start with, maybe it's a true distortion. Maybe it's about redistribution.

But think about, OK, redistribution at some level, it's kind of the same thing. You're telling me that the marginal value of a dollar is not equalized across different groups of people. And so I may still want to use tariff, if I have this consideration. The next question, perhaps more subtle question, is, OK, you told me that a tariff could help, but should I really use a tariff or could I do something better?

And some of the most influential ideas, perhaps, in trade and public finance, is the targeting principle, that the fact that you could use tariff as a second or third-best instrument doesn't mean that you should use it, that there may be some better, more targeted instrument that you could use to fix the distortion.

So think again about just to fix the [? idea, ?] the case where you have a production distortion. So I have a problem with the semiconductor industry in the United States. It's too small. So it should be bigger. And I just told you by imposing a tariff, I could raise the price of semiconductors in the United States, incentivize firms to produce more.

OK, so I can fix my production distortion. I'm happy about it. The problem is that, ah, in the process, I'm creating another distortion, that semiconductors that consumer firms are buying these are facing, this is also going up. And so we're going to affect that margin. So think about it this way. The tariff is really like a production subsidy and a consumption tax bundled together.

If you think separately of the prices faced by consumers and the prices faced by firms, when you put a tariff, both of them are moving simultaneously. And that's why you have these two red dots here. Everybody in the United States is now facing a higher price. Good news is that the higher price means higher output, which I wanted, but it also means lower consumption, which I didn't want.

And so the fix in that example, so think about that, acupuncture with a fork. So you had a problem. You can help with the tariff, but it is a pretty crude instrument to achieve your goal, which was that particular triangle. It wasn't this one. So tariff is acupuncture with a fork. In the context of that example, we know what we should be doing.

We should just use a production subsidy that's going to target the inefficiency directly. What you want to incentivize are the firms to do something different, not the consumers. The consumers are doing just fine. They were stopping consuming, just when marginal utility was equal to the price that we're happy with.

So now with the subsidy, we're going to get exactly that, P star plus s. That's the price that the firm is facing. So they're facing a higher price. They're going to produce more, up to the point exactly where we fix that distortion. But a subsidy is not affecting the prices that consumers pay at the border.

They're still facing P star. They're still making the right decision. We have exactly the asymmetry that we want. So trade protection is acupuncture with a fork. Think of the targeting principle as, we need to use needles instead. OK. So the fact that the tariff can help doesn't mean that that's the right instrument to make progress on these distortions.

So that's the efficiency case. That's the case of distortion. What about redistribution? Well, actually, all those ideas, they apply also to the case of redistribution. Actually, some of the most influential, famous results in economics are related to that idea.

So think about the Second Welfare Theorem. You may have some redistribution objective. OK, don't distort the economy. Let the prices do their magic, but use lump sum transfer instead. Perhaps slightly less well-known, but equally influential-- Diamond Mirrlees' Production Efficiency Theorem.

Maybe you don't have a lump sum transfer, and that's a very strong assumption to make, but you have linear commodity taxes on every single good, every single factor you could tax. Then again, you wouldn't want to distort production. You would just want to create a wedge between the prices that consumers, on one hand, are facing and those that the firms are facing.

So production efficiency, if you want, you can think about it as, out of all the many wedges that I could introduce as a government by putting taxes, I only want to step in and put one between the consumers, on the one hand, and the firms on the other. I don't want to mess up between firms. I want firms to all face the same prices such that we are all on the production possibility frontier.

A corollary of that-- I've told you, trade was just like technological progress-- is that I don't want to create a wedge between the world price and the domestic price that the firms are facing. I would want only the consumers to face a different price. So these are two results that would say free trade is optimal, by assumption.

And the reason why free trade is optimal is because I have the needles. I have those very precise instruments. When it comes to the lump-sum transfer, I think everybody would say, OK, if that's your defense of free trade, that's a pretty weak defense. We know we don't have that. We're not close to that.

What about the linear taxes? I think even the linear taxes, that's a very strong assumption to make. And here, I've emphasized "full" because the assumption one is making in this case is, for example, when it comes to different factors of production, so different types of labor-- so there may be high school graduate, college graduate, we don't think of them as perfect substitutes.

For this result to hold, you would have to be able to tax differentially different type of workers. If you can, then free trade is optimal. But in practice, we know that we have income taxation, but that's income taxation. It's not a different income tax schedule depending on how many years of education you have. That's a coarseness of our [? taxes. ?]

So some work that I've done with Iván was trying to think about that same issue of tariff as redistribution, but in an environment that we viewed as more realistic, one where-- you don't want to say there are no other taxes than tariff to redistribute. That sounds crazy. We know that we have income taxation. But on the other hand, we know that income taxes, they're, in some way, more restrictive than that full set.

Why do we think that's interesting? Because, well, if you are in such a world, which we think is a realistic one, where you have both tariff and income taxation, you may want to use tariff as predistribution. So think about this as, before you're going to use income taxes, you may want to slap a tariff. Because again, the tariff is going to affect the domestic prices. And in so doing, it may affect the distribution of earnings.

So again think about the China shock. So you're getting some cheap toys from China. If you slap a tariff on those goods, you may increase the demand for the workers who are producing those toys in the United States. You're going to build up their wages and you're going to affect the distribution of earnings.

This is before you're doing any income taxation. Of course, if the taxes could directly target those guys-- I mean, there's no reason going through the tariff to get there-- but if you don't have that ability to target different types of workers, you may want to use tariffs as predistribution. So in that world that we think is more realistic, free trade is not necessarily optimal.

And then what we show in the paper is that, quite generally, then what's going to matter for the level of the optimal tariff is precisely that ability to affect the income distribution via imports. So at the margin, when you buy one more doll from China, how is that affecting the distribution of earnings? That's the object that we need to know.

And then we show, OK, so in theory, you may want to impose a tariff. Let's try to use the best evidence we have. So this is a paper here in *Econometrica* that's going to look at the impact of the China shock, so surge in Chinese imports at different point of the income distribution. And so let's take that as, OK, that's the causal effect of imports on the distribution of income.

If I take that at face value, what would we say the optimal tariff should be? And here, we end up with a number that's still pretty small. So that, we thought, was interesting as a matter of going from empirical estimates on the effect of imports, in that case imports from China, on the income distribution in a realistic world with instruments for redistribution, but limited ones.

OK, one more thing. So I said you may have better instruments, and that's one reason. That's the targeting principle, not to impose tariffs. Yes?

AUDIENCE: Sorry, on the tariff number--

ARNAUD COSTINOT: Yeah?

AUDIENCE: --if you just calibrate a gravity model, the number is much bigger. So why is the number, like, 20% or 30%?

ARNAUD COSTINOT: Oh.

AUDIENCE: Why is number so low here?

ARNAUD COSTINOT: So the number here is purely about domestic redistribution. So the input we feed in is causal effect of imports on earnings at different point of the distribution. And think about the simple version is, it just doesn't move enough, given the magnitude of our imports from China, for the tariff to be large.

The gravity model you mentioned, the number that come out of a simple model like this, this is not about domestic redistribution. This is a representative agent. So this is purely about international redistribution. So this is the calibrated version of that simple model, saying that if I impose tariff, I can move the world prices quite a bit, and I can generate transfer from the rest of the world to me.

And that number may be much bigger. So that's a good transition to what I was going to talk about. So one thing about the classical optimal tariff argument is that it isn't subject to the same targeting principle idea. If I want to generate transfer from the rest of the world, tariff may be the way to do it. Assuming that I cannot seize resources in other country, that would be the way to generate transfer.

Now, what was implicit in what I was saying was that you're doing it, but the rest of the world is passive. The question now is, OK, my terms of trade, so terms of trade are the price of my exports divided by the price of my imports. That's what matters for my welfare. It's my ability to buy stuff from abroad with what I have.

So my export price, my price as a seller divided by my import price. When I impose a tariff, I told you this is going to be good for me. This is going to tend to improve my terms of trade. I'm going to make my stuff more valuable by creating this excess supply of foreigners goods.

But foreign tariffs have the exact opposite effects. If they impose a tariff, they're going to make my stuff less valuable. So just to remind you, that was the picture when we said-- I impose a tariff, I create an excess supply of the foreigners' good. The world price will have to adjust downward for this to be absorbed, and that's a benefit for us.

But foreigners could do the exact same thing. My unilateral incentives to impose a tariff is there unilateral incentives to impose a tariff. So what happens in the rest of the world? Well, they could do the same thing. They could impose some tariff, t star. They could create an excess supply of my goods, generate some transfer.

Now, what's the net effect on those things? It is entirely possible, actually, if the two countries are symmetric, this is what would come out, that all countries end up being worse off. So the problem here is that the transfers are going to cancel out. My goods are getting more expensive, their goods are getting cheaper. Maybe in some industries, it's the reverse.

The transfers cancel out. But there's never any offsetting effect for the distortion. So you try to make yourself more expensive, they try to do the same. In the end, nobody is succeeding because everybody is doing the same thing. But we end up with the distortion.

So Bagwell and Staiger, I've been the one pushing that idea that trade protection, when driven by this international redistribution concern, is very much a prisoner's dilemma. So countries have incentives unilaterally. It may be a dominant strategy to be protectionist.

But they end up in a Nash equilibrium where they both impose tariff, and yet they're worse off than under free trade. And so they view the role of a rule-based order, WTO-like, as creating constraints such that given the WTO institutions, the new Nash equilibrium is Pareto superior to the one where both countries are following their unilateral incentives and being protectionist.

One more thing I want to talk about before getting into data and empirical evidence, but what we know about the recent tariff. And when I say the recent tariff, I don't mean 2025, I mean 2018, 2019. So we've reviewed the theory and how we think about whether tariffs and good and bad.

But now, if we were looking at data and trying to assess, a little scorecard for-- it was a good idea; it was a bad idea-- what would be the smoking guns for success? In terms of efficiency, I think it's hard. Conceptually, I don't think it's complicated. You're telling me that you think some sectors are too small, maybe semiconductors, maybe some other critical high-tech sector.

OK, how big do you think that sector should be? How far should we go in promoting them? It's especially hard if you think that, OK, and the underlying motive here is influencing some geopolitical action in the rest of the world. What do we know about the marginal effect of our import and export decision on geopolitical action in the rest of the world? That, plus the social value of that marginal action?

So conceptually, OK, it's as simple as my diagram, in terms of how I would bring that to data to assess a failure of success. Yes, I think that's a complicated question. The redistribution one, I think it's actually much, much easier in the sense that, OK, I've given you two broad motives, one domestic and the other one international.

So one is, OK, this is what we're getting in the US. This is how I am going to cut different slices for different people. And then there's the question of, how much does the US get versus the rest of the world? So these are pecuniary effects. So this is about prices. This is about prices in both cases. And they're about different prices.

So if really your motive is redistribution in the US-- you want to help manufacturing workers, for example-- what I need to look at as a researcher is what's happening to prices in the US. If prices in the US that consumers and firms are facing are not changing, yeah, nothing is going to happen to their wages, nothing is going to happen to employment in manufacturing.

The only reason why, say, firms in the US are going to be incentivized to hire more people in manufacturing is because the prices have changed. If the prices that they face don't change, they're not going to change their behavior. And so if you remember my notation from the previous diagram, that's P star plus t. It's the price inclusive of the time.

That's the one we want to see moving because that's the one that the firms and the consumers are facing in the United States. P star, that's the price in the rest of the world. That's the one that the foreign exporters are getting. That's irrelevant for the behavior of consumers and firms in the United States. So if you're really interested in domestic redistribution, you want to see some action there, directly or indirectly.

But that has to be the core of the matter. If instead you're interested in international redistribution, that's not your concern. Your concern is just P star. You just want to see whether foreigners are giving you a discount. You used to pay $30 for a doll. Are you paying $25? That's what I want to know. It's irrelevant whether the consumer in the United States is paying more or less.

So with that in mind, let's look at the 2018-2019 Trade War, what happened to different prices and what happened also to manufacturing employment. So there's very little evidence that actually foreigners paid for the US tariff. So if you look at the 2018-2019, what people have done over that time period is to compare prices of goods subject to a tariff in the United States to those that were not.

So they might have been Chinese goods, some of them subject to a US tariff, versus other Chinese goods not subject to a US tariff. Or they might have been the same good, but one of them exported by Vietnam not subject to a tariff, and the other exported by China and subject to the tariff. And so think about polling across these different sources of variation and reporting whether or not good subject to a tariff were affected differently.

So this is from Amiti, Reading, and Weinstein. This is, here, for all goods imported in the United States. This is, then, breaking it down across different goods. So this is an event study. So this is the pre-period before a tariff is imposed and this is the post-period.

What we're reporting here, we're looking at prices inclusive of the tariff. So we abuse notation a little bit and not worry about log versus additive. Think about it as what they're reporting is P star plus t. So this is the price inclusive of the tax. And they want to see what happens when you change the tax.

If the price doesn't change, well, what I should see is that, if P star doesn't change, dP star dt equals 0, I should see that dP star plus t dt should be 1. The only effect that I should see when I look at prices inclusive of the tariff is the mechanical effect of the tariff. That should be a 1. And what you see here is something that's very, very close to a 1.

And that's the complete pass-through finding. For foreigners to pay for the tariff, there should be incomplete pass-through of the tariff. Part of it should have been absorbed in a decline in P star. You see some of that for steel. So steel is interesting in that you see some action for steel. But that's basically the only thing that we see.

So a number of researchers have run similar regression with a similar conclusion, that there is complete pass-through that doesn't smell like foreigners paying for the tariff. There's one important caveat that I still think I need to flag. It'd be great if we could just get the answer from the data, look at this event study-- it's a pretty nice one-- and say, sorry, we're at 1, so foreigners did not pay for the tariff.

We have to remember, though-- and there, maybe that's where thinking more general equilibrium than the partial equilibrium picture I was showing you is important-- on the picture I showed you, P star, this is really meant to be the relative price. It's the relative price. There's some numerator out there. I didn't show it to you, but it's there.

And the price we're looking at, P star, is the price of the goods we import. There's another good out there, which we're exporting. So implicitly in everything we've done so far, the relative price of interest was imports over exports. This is not speaking to imports over exports.

This is just looking at goods that are importing into the United States. And you're comparing whether some goods that the US is importing are changing more or not than others. And we're seeing that at the border, basically nothing happens. Whether it's coming from Vietnam or from China, prices don't move.

So the only thing that you see adjusting for the tax is the movement in the tax. So these are evidence about the relative price of imports. Now I find them surprising. My [? prior view ?] would have been that things would be looking more like steel than they did overall. But it should be clear that they're not telling you whether or not imports over exports change.

This is some US imports over US imports. But for welfare, imports over exports is really the one you care about. So one possibility, but that's a much more difficult question empirically is, look, over that period, we've seen the dollar appreciated. That happened.

Did that dollar appreciation lead to an increase in the price of US exports? That's not inconceivable. Well, that's a situation that that's a terms-of-trade improvement for the United States. That's not showing up in that event study, but that's a possibility that you have to remember.

So I tell you we've seen that the prices at the border moved one-for-one with the tariff. And if we take the little diagram we were looking at before seriously, then that means that the consumer price is moving one-for-one for the tariff. Now, the real world is a little more complicated than my real diagram in that, OK, the prices at the dock inclusive of the tariffs, they're not quite the prices that consumers face.

And you think about that as, really, the good at the dock is just an intermediate good that will have to be delivered, put into a store, et cetera, sold by a Walmart or some other retailer. And that, down the road, is what's going to give us the consumer price. So what those authors have done is to actually look at retail prices faced by consumer. So they go online, they collect prices for two major retailers.

And then we do something very similar, which is compare goods at the store, at different stores, depending on whether they're from China and not affected by the tariff, they're from China but affected by the tariff, or there's from some different countries that's just not China and not affected by the tariff. Or they also look at whether we are in the US, where there are tariffs, versus where in Canada, where there are no tariffs.

And do we see anything different in retail prices depending on whether there's direct exposure to the US tariff or not? Are you [? able? ?] You just don't see much, in terms of a differential effect, whether it's Canada versus the US, on the retail prices. So you can run a regression that would be a systematic version of that picture, and you get very little effect of the retail prices.

Over that time period, they remain surprisingly stable. So I told you that at the border, the goods moved one-for-one with the tax. In the retail store, they remain fairly stable. And so what has to give? What has to give are the profit margins of the retailers.

Their input prices-- they're buying the stuff at the dock, including the prices that went up-- the prices at which they sold those goods, they didn't change very much. And so over that time period, the conclusion from that work is that this seems to be mostly about the profit margins of retailers going down. So if you think about it, OK, that sounds like domestic redistribution away from the retailers.

Quick footnote, 2025, we've seen a little more of a response already of the retail price changes. So that group of co-authors, their preferred estimates suggest that out of the 2.7% or something inflation that we've observed, 0.7% is coming from the tariff. So something that's maybe not huge, but not negligible.

Last thing I want to show you is US manufacturing. So David Autor here with his co-authors have looked at the impact of tariff exposure on commuting zone employment, breaking it down also by sectors. So they see very little effect of the first 2018 tariff on the employment of different commuting zones.

They also don't see very much effect. So you see here, basically, you get 0, no significant effect of import tariff exposure. So we don't see manufacturing responding at that time horizon. And maybe this is just at that time horizon. But at that time horizon, there's very little that is happening.

So in the data, we don't see much redistribution from other countries towards the United States. We see some redistribution, maybe in terms of those retailers' margins, and then fairly little action in terms of manufacturing employment. The last thing I want to talk about is whether global tariffs are unfair to the United States. Yes?

AUDIENCE: What's the leading theoretical explanation for why it's US retailers who just swallowed all the tariffs?

ARNAUD COSTINOT: I don't think that people have a very good sense of why that was. I think what you hear is that they thought it would be very temporary, and so they decided not to adjust their prices because they didn't think that the tariff would last.

And if they were to stay longer, then they would finally raise their margin. So it might just be, OK, in the short run, they didn't. But in the long run, we think they will. And the 2025 tariff, perhaps is suggesting of that, that now we know this is here to stay and we'll raise our price.

OK, are global tariffs unfair to the United States? So one narrative you hear among some advisors of the second Trump administration is that the world trading system may be rigged against the United States. And the goal, then, is to redesign, rebalance the trading system in a way that would be fair to the United States.

So Steve Miran has been making that point. Here I have a quote from Peter Navarro in the *Financial Times.* So this is around May 2025. "The international trade system is broken-- and Donald Trump's reciprocal tariff doctrine will fix it. This long-overdue restructuring will make both the US and global economies more resilient and prosperous by restoring fairness and balance to a system rigged against America."

So one way you can approach that is by looking at the tariff that the United States is imposing on the rest of the world. So on average, when the US imports, how large are the tariffs? And I was telling you, pre-2018, that was around 2% That was pretty low.

And you can compare that to the average tariff that the United States faces as an exporter, so taking into account the composition of the goods that the US is exporting to the rest of the world. And when you just look at the raw data, there is definitely an asymmetry between the US and the foreign tariff.

That's the tariff that the US is imposing. That's the tariff that the US is facing. And so you see that qualitatively there is an element of truth to that [? world ?] is asymmetric. The US tends to have lower tariff than the rest of the world, especially developing countries.

Now, what strikes me more about that picture, I mean, qualitatively it's true, but they're very small in magnitude. This is 3.5% to 2%. Is it conceivable that the United States would be better off if that blue line was above the red line? Maybe. But do I think that that would be a huge windfall for the United states? Probably not.

Is it the case that if the blue and the red line were even lower or the same, that the entire world would be better off? Again, it's a possibility, but I suspect that the upshot of that is pretty limited. And so my take when I see that is that, OK, it's a pretty risky endeavor to, OK, we're going to completely redesign the world trading system, trade wars be damned, to get rid of that difference.

There are other arguments that have been given by the same people about the rest of the world being unfair to the United States, which I think are clearly even less valid than this one. One is things like, product standards, hormone-growth beef. So in Europe, you cannot sell hormone-growth beef from the United States. It's true.

Is that a legitimate health concern in Europe? Or is that to protect European farmers? I think you can make a case that perhaps it's not entirely legitimate, that there's some protectionist motive in the background. But if your goal is to boost manufacturing in the United States, that doesn't seem like the right place to start.

And then there's a question of, what about value-added taxes? 20% in Europe, there's a border tax adjustment. When they export, they don't have to pay it. That seems unfair because we pay it when we export into Europe. That's completely misplaced. That value, that border tax adjustment should be neutral. By [? order of ?] symmetry, that's not protectionist. So I don't think this is neither here nor there.

So what's really bad about trade wars? So for the final question, what I want to do is go back to the pictures we saw at the beginning with the gains from trade and the cost of trade protection, and just walk you through the numbers that comes out of these exercises. So remember, that's the problem with the tariff-- you create these wedges, you misused that technology, you produce a little too much, you consume not enough.

How big is the cost of the US-China Trade War 2018-2019? So conceptually, this is just trying to compute those the areas of those two triangles. There's nothing else that goes into it. So there's a paper in the *QJE* by Fajgelbaum and co-author. The number is 0.04%, so that doesn't strike you as existential.

Actually, interestingly enough, if you take into account the terms of trade effect, so the fact that when the US is imposing tariffs, its terms of trade improve. That happens in their analysis. There's a tiny gain. And the reason why the loss is 0.04% is coming from the retaliation from China.

So I don't quite do justice to that analysis by showing it here. There are these terms-of-trade effects happening in the background though. With the [? wash, ?] we end up with the distortion. Caliendo-Parro do something similar. They go up to 0.1%. But 0.04%, 0.1%, I think people would look at those numbers and say, well, if that's really the number, I think we can survive.

OK, so you could say that was the first US-China trade war, but as I was telling you, we went from 2% to 4%. Now, today, this year we went from 4% to 20%. That's 1930s territory. So what happens? What do we think we may lose at this point?

So one way to go crazy, in terms of through the lens of our favorite model, what would we say the cost might be, is to think about the overall gains from trade. The worst-case scenario for the US, it's not like I'm going to create these little triangles, but maybe I'm going to stop trading altogether. That's that entire triangle there.

So when you look at the cost of autarky, so this is something we've looked at with Andrés in the *Journal of Economic Perspective.* So that's that triangle. Conceptually, that's what we're trying to do. Depending on the model you filter your data through, you get numbers that range from 2% to 8%.

2% to 8% is nothing to spit at, a few points of GDP. But I think for many people, that would look like it's still not a very large number. And this is a dramatic thought experiment. You're thinking about completely shutting down all trade. So why is it that we don't get larger number?

There's something very basic, which is the dirty secret of the US is just it's not that open of a country. Imports over GDP, it's only 15%. It's much lower than in many other countries. So think about it as, yeah, there's a lot of trade that happens inside the United States. It's between Massachusetts and Texas and California, et cetera. It's not with the rest of the world.

Obviously, if your country was 99% of the world, trading with the 1% left wouldn't be that important. The US is what, a quarter? But that still applies. So when you think about the geometry of it, it's any kind of model that you would write down would have to tackle this, that the base is just not that large. It's only 15%. There's housing, there's health. And so that's one reason.

The part that's harder and the one where, OK, we're mixing data and theory, but maybe there's more heavy lifting from the theory than the data-- or at least there's a non-trivial part of the theory here is, OK, what do we know about the height of that triangle here? So think about that as, OK, this is about the import demand elasticity.

So if I were to raise the price, how elastic or inelastic would my demand for imports be? And part of the reason why the gains here don't come that large is because the demand is fairly elastic. If demand was perfectly elastic, I'm importing stuff, but the perfect substitutes for what I already have, that triangle would just look inexistant.

I think there's considerable uncertainty about elasticity. So when you see 2% to 8%, this is not like we're changing the data. I'm filtering the data through different models that are allowing the same moments to suggest something more or less elastic. The problem is that, yeah, I don't see the United States close to autarky.

So it's entirely possible that, today, imports look pretty elastic. But if I get closer to autarky, the last marginal import is the stuff that I really, really want, and I wouldn't stop consuming it even if the price was to raise like crazy. So as the US gets closer to autarky-- it's a pretty bold endeavor to extrapolate from where we are today to where we would be close to autarky, obviously.

And I think that's especially true in the short run. So if you think about things like rare earth-- yeah, look, if you tell me that something is critical that I cannot produce without it, I don't need to write down a model to tell you that it's going to be bad when we don't have it. But it's probably only in the short run. In the long run, I could find some substitute for rare earths.

In the long run, I could start mining rare earths in the United States. It would take time. So think about all these considerations boiling down to, yeah, ultimately, how elastic do you think that thing is? So here, I'm making it less and less elastic. And you can see that the gains are getting bigger as I play with this consideration.

One thing I should mention, though, for what it's worth, is that there are precedents, in terms of historical episodes when we get back to autarky, actually. So Japan is one famous example, in the 19th century, when it goes from autarky to opening up to trade. There's also the Jefferson embargo in the United States.

And so people like Doug Irwin have used that episode to try to put some numbers on the cost of autarky. And that's around 5%. So that's in the same ballpark. So again, I think there's a lot of uncertainty. But maybe, in practice, elasticities are lower, so that would go towards something higher than that.

But full autarky is probably also an upper bound. So maybe a few points of GDP is not a crazy way, as a way to get started, on the cost of protection for the US. And again, my own view on these things is that a few points of GDP, nothing to spit at, but not an existential threat either.

Now, when I think, I think it's interesting that we're back to the levels of trade protection in the 1930s. So the 1930s is what Doug Irwin calls the great trade policy disaster. And my sense is that the reason we call it the great trade policy disaster is not about misallocation due to tariffs across that period.

It's not about the cost of living increasing because of prices over that period. And that's certainly true that it contributed to that. But I suspect for most people, the reason why it made it to the history book is because you think that the tariff might have contributed somehow to less international cooperation and through less international cooperation, had some role to play in the onset of World War II.

And if that's the case, that's obviously a much bigger concern. So this is a paper in*RES* done by Martin, Mayer, and Thoenig. So this is not tariff, this is trade openness. So this is looking at how much trade we have in the world, measured as trade over GDP.

Dashed line is the probability of war, so how many countries are in a conflict. And you see this negative relationship between the two-- less trade, more war; more war, less trade. Obviously, causality runs in the two directions. They try to instrument for that.

But when I think about, again, the potential cause of trade protection, there was a tweet also back in May by President Trump about the European Union, making the case that the European Union had been created for the sole goal of taking advantage of the United States on trade.

No, the European Union was created to avoid this. That was the issue. And that's the concern today. And I'll stop there. Thanks.

[APPLAUSE]