

[SQUEAKING] [CLICKING] [RUSTLING] [CLICKING]

ESTHER DUFLO: I am Esther Duflo. And this is Ben Olken, who is going to quickly introduce himself in a minute. This is part of a two-course sequence on what we think are the core things to know in development economics. I'll describe a little bit the full syllabus in the course of this lecture, so I'm not going to say more just now. But it's basically a sequence that we've worked on, developed, over the years, between Abhijit Banerjee, Rob Townsend, David Atkin, Ben, and myself.

So we are super excited to teach it-- happy to have all of you here. And Ben will say a few words before he has to head out.

BEN OLKEN: Great. I think I have to stand next to you, to use the microphone. It's great to see all of you. And it's terrific to be back here in person.

For those who don't know me, I'm Ben Olken. I'm a development economist here at MIT.

And my own areas of research are primarily, in the last 10 years or so, on the public sector-- the roles of the public sector in development and understanding the different ways in which we think about public-sector issues in developing context. So I'm going to be teaching a variety of topics this semester. I'm sure Esther will go over them today. But that will be what I'm covering, at the end. I think that's enough for now, and I'm really looking forward to seeing all of you this semester.

ESTHER DUFLO: So maybe a little practicality, just getting the practicality out of the way-- this is a class that-- how does it work? It works in a fairly classical way. We are going to-- you have received the syllabus, on the Canvas website.

The Canvas, I think, should be open to the entire community. So, for the time being, anybody who is here, registered or not, you can have access to the Canvas. As the enrollment stabilizes, people know where they are, we are going to lock it to the membership only. But, for now, anybody who is here, or even who is not, should have access to the syllabus. I'll then describe a bit the syllabus.

But otherwise, we'll have lectures on Mondays and Wednesdays and a recitation once a week. In the lecture, it's going to be-- so, about once a week, we'll ask you to read a paper before the lecture. And there are about 24 to 48 hours before the lecture, to write down on the Piazza website a comment or a question that you have about the paper. This is something we have found useful-- first of all, as a commitment device, to make sure that you're actually reading the papers. It's like you have to write the comment. [INAUDIBLE] because you're doing that a little bit before the class. I will have read the comments, and then I can incorporate the comments and the question when I teach, which is a first way to get your input-- in addition, of course, to anything that you would want to say in class.

Other than that, we'll have a problem set that are going over in particular the empirical method. So this is a class that's focused a lot obviously on content and how poor people live their lives and how to understand them. But also, as we go along on methods, a little bit like the labor class, which is both about labor markets and about methods in labor economics. In particular, this first sequence is, at the same time I'm going to introduce you-- especially in the first half of the class that I'll be teaching, I'm going to introduce you, as I go along, to the workhorse methods in empirical economics that we'll use.

So, for some of you, if you're second-year or third-year, that's going to be review. For some of you, it's going to be brand-new, but it's taught at a level that, in principle, everybody should find something stimulating or interesting and you shouldn't get lost too much. And if you are, then you should make sure to talk to Ed or talk to us.

Ed is, going to, in the recitation, emphasize some of the point-- go over some papers in more details. In particular, one thing we really would like to get out of the first and second years is not only that you have read content and you know papers but that you have a sense of how one builds a paper, one builds a results a research agenda, one constructs an empirical specification, what sense it makes, and so on and so forth.

So in terms of requirement, besides coming to class, participating, et cetera, we'll have a few problem sets that helps you where you'll get your hands dirty on data and some such. Hopefully they are interesting and not make-work. Then we'll have a replication or an empirical exercise and a research proposal that-- you know, you can start thinking about ideas that you can take forward-- assuming you want to continue in this field.

This class is really for anybody [LAUGHS] who is interested in getting-- so first of all, of course, anybody who wants to do development as a field. But I also think that it's a good class for any economist to take, because the development issues are cross-cutting across all fields. So of all the field of economics, development is the one that is the most wide tent, where people--

You might think that, oh, at MIT, we associate development with [INAUDIBLE], but that's not true. Development economics research use a whole range application of methods and a whole range of insights, from behavioral, from public finance, from labor, from macro-- econometrics, obviously. There is really not a cultural tradition of development economics. It's super open, which you will also find if you continue in the field, as you go to conference, that there are papers going all around the place, which means that, as a young economist, as a budding economist, what you will find in the class is application of everything else that you're learning in other classes to the topic of how the poorest people live their lives.

And you might wonder why it's an interesting topic, why it's an important topic, why we should think about it. But maybe you don't wonder, because you're already here. But it's always worth thinking of-- I like to start, every year-- regardless of whether I teach or not-- to remind me of the enormity of the fact.

So in the handout that Ed distributed, you will find the gross-national-income tables produced by the World Bank before the COVID-19 crisis. I will start talking about the COVID-19 crisis in a minute. They use gross national income as opposed to GDP. Do you happen to know the difference between the two? You go ahead.

AUDIENCE: Gross national income is that produced by residents of the country, regardless of where they are.

ESTHER DUFLO: Exactly. It's income that residents receive, no matter where they received it. So that's a slightly different measure, but it's relatively similar. And maybe it's the better view of standard of living.

Then it's given in PPP. So, just a reminder of what's the PPP adjustment-- what does PPP stands for, and how do we--

AUDIENCE: [INAUDIBLE] purchasing [? power? ?]

ESTHER DUFLO: Yep.

AUDIENCE: And it's an adjustment for how expensive a particular type of [? goods ?] is.

ESTHER DUFLO: Exactly. So it's more expensive to get a haircut in New York than in Delhi. That's the extreme version, because it's only labor. But it's more expensive in general to live your life in Norway than it is in France-- and in France than it is in Burundi.

So that's the [? effort. ?] I should emphasize that-- so how do you think we do that-- or they do that-- the PPP adjustment? Because once we've said, oh, it's PPP-adjusted, I think it's useful to think for a minute about how one would do such a thing.

AUDIENCE: Do they send people out to basically try to assess if there's a set of goods that could be considered the same quality, across many different countries and that determines the price?

ESTHER DUFLO: Yes. So let's unpack that. So [? Racquel ?] is saying you send people to find goods that have the same quality. First of all, you need to-- which goods would you-- one might pick? Which goods might one pick?

AUDIENCE: Like, food often?

ESTHER DUFLO: So what you want-- yeah, food, but what you want is basically a basket. And you want a basket that people consume. And now you immediately have the problem that people do not consume the same basket in Burundi and in Norway in the first place. So the entire exercise-- it sounds very easy to say "we adjust for standard of living," but in fact it's very tricky. Because this is the [INAUDIBLE] indices of inflation if it rings some bell from undergraduate economics. But very, very on steroids, in a sense, that problem is, which is--

In fact, it's very nice to think that one could do PPP adjustment, but one cannot very easily, because the baskets are not even the same. And then there is the question of the quality which [? Racquel ?] emphasized. And then there is a question of actually getting hold of the prices. In rich countries, there are scanners and people use scanners. In poor countries, you have indeed to send people out to markets. Where you send the people to the market is making a huge difference.

So if you're only sending them to the cities, you get the prices in the cities and you get the goods in the city. But you go to the countryside, you go far from the city, the goods are not the same. Some goods are going to be entirely missing. And the prices are not the same. You're very far from the place where the things are being produced or shipped, and so the prices have gone up. Or maybe the demand is very low, so the prices have gone down. Who knows? But all that said, it's not the same.

And so there is a project at the bank called the International Price Comparison Project, which is a big team of people which are doing that all the time. And from time to time, they give you revised PPP adjustments. And then they immediately get under fire for not having done it right. And it's not completely anecdotal, because it becomes very, very political, how many poor people there are in a particular country. At some moments, countries want to have a lot of poor people, because that helps them in getting assistance. And some people, they want to show that they have eliminated poverty, so they want to get rid of the--

So the moment these price lists come up, there is a big political hullabaloo. So all that to say that, when we look at [LAUGHS] the piece of paper-- just on this piece of paper of [? the ?] gross national income, there is a lot of assumption behind. There is a lot of politics behind. And you can make sure, for example, that Angus Deaton will go after you for not having done it right.

But they are doing the best they can. And they produce this synthesis. And we are using them. So, conceptually, we are trying to say that it adjusts for the price of living.

With all of that said, what's the richest country in the world, according to those tables? Or richest few countries in the world.

AUDIENCE: Singapore?

ESTHER DUFLO: Singapore, maybe? I think there is one that's even richer. Sorry?

AUDIENCE: [INAUDIBLE]

ESTHER DUFLO: Yeah, that's definitely in the top. I should have the piece of paper, to verify. I think it might be Macau, with a gross national income per capita of \$123,000. And then Singapore, Qatar, Bermuda, Luxembourg, Switzerland come close, below.

Now, of course, what's wrong with these countries, all of these countries, really, in terms of thinking of the standard of living? Yep.

AUDIENCE: They all consist of essentially one or two large cities?

ESTHER DUFLO: Yeah, yeah. And they are [INAUDIBLE], like tax shelters and [INAUDIBLE]. Maybe that's not real. So next, if we remove them, who comes next? Sort of a real country.

Oops.

AUDIENCE: Is it the United States?

ESTHER DUFLO: Yeah, not bad. Quite close. There's one more that's just-- Norway? Yep. We have Norway and then the US. And then what's the poorest country?

And of course, life is super expensive in Norway. But remember, it's PPP-adjusted. The poorest country in the world-- I already put this slide up, so I'm going to not let the suspense hold. It's Burundi, according to this list, at \$790.

So if we do the ratio of the two, that's the large-- you take your Norway to Burundi, it's a ratio of almost 100-- 1 to 100. And remember that we've tried the PPP adjustment. So it's hard to think-- it's hard to fully visualize them, even though we've no-- you're thinking still of-- thinking of Burundi and living. But we've, in principle, done the PPP adjustment, so this is as close as we have, from this very simple measure that's an imperfect measure that is income of what standard of living are present.

Now, that's a lot. And therefore, understanding where this comes from, and understanding how people with so little money live their life and manage and all of that, is of prime importance. It's hard to think of something that's more key, compared to-- I love public finance, but we are thinking about improving the-- reducing some inefficiency in something, reducing the triangle by 2%. [LAUGHS] I'm talking about differences in income of 1 in 200. So that has to be taking a lot of space in our brain.

And of course, you could say, well, it's just money. Money's not everything there is to poverty. But these income differences, of course, matter for well-being outcomes, more generally, as well. It's often a mistake we're making, of equating GDP with well-being. We're certainly not going to do that mistake in this class, but we can see that it is related.

So for example, if you look at the under-five mortality in Norway, it's 2 deaths per 1,000 live births. If you look at the infant mortality in Burundi, a similar number-- it's 57 deaths per 1,000 live births. So this factor of 1 in 200 in standard of living is also a factor is 1 into 25 in the chance to make it past your first birthday or your fifth birthday. And although income is neither necessary nor sufficient-- so for example, if you compare, what is under-five mortality in the US?

AUDIENCE: It's 7 per 1,000.

ESTHER DUFLO: 7 per 1,000. So it's, like, three and a half times Norway, with a very similar GDP per capita. And now if we compare Sri Lanka and Guatemala--

AUDIENCE: 7?

ESTHER DUFLO: So Sri Lanka is how much?

AUDIENCE: 7?

ESTHER DUFLO: 7, like the US. And Guatemala?

AUDIENCE: 25.

ESTHER DUFLO: 25. And Guatemala is, if I'm not wrong, richer than Sri Lanka in this table. So income is not sufficient. It's not necessary. Sri Lanka is just as good as US, in this table.

I should say, this is pre-COVID numbers. Sri Lanka is falling apart right now. But this is pre-COVID number.

And on the other hand, you have countries that are very similar level who are doing very differently-- showing the importance of probably policy but also maybe culture or maybe the way people organize their lives, et cetera-- so, showing that there is certainly a lot to understand about what can be done even with very little money, with very little income in a country, and what can be wasted even with a fair amount of money.

Of course, the COVID-19 crisis, in a way, it makes you think that you should listen-- you should do health economics. But, for me, it's one more reason why we need to do development economics. You all know that the rate of vaccination is extraordinarily unequal-- again, by income level. So you're seeing--

The colors here is according to the number of doses received. This is relatively recent data. I think I retrieved the data towards the end of July. And you're seeing the US, Europe-- dark blue, as a lot of people get vaccinated; Africa, almost white. So as we are thinking about booster shots and immunizing children and things like that, the number of people who are vaccinated against COVID in Africa is less than a few percent.

Another thing that was very different during the COVID crisis, and sets apart what it is to be poor and really just makes-- is probably a direct consequences of poverty, is the budgetary and fiscal support to people and [INAUDIBLE]. Across the rich countries, do you know-- and this is so small that you probably can't [? read, ?] and therefore I can ask you the question-- do you know, more or less, what fraction of GDP rich countries spent on fiscal stimulus measures during the COVID crisis, on average? Try a ballpark number. More than 5% or less than 5%? More than 5%. More than 50% or less than 50%?

[LAUGHTER]

[LAUGHS] Less than 50%. [LAUGHS] So somewhere between 5% and 50%. About 20%. About 20%.

So the EU, the US, the rich countries, Korea, spent about 20% of their GDP on fiscal stimulus measures. Now, how much money did the poorest countries spent-- ballpark? As a fraction of their GDP-- which, of course, is much smaller, as we know, because they are the poorest country by definition. About 2%.

So the poorest countries spent about 2% of their much smaller GDP to prop up their economy during the COVID crisis. And then the emerging market spent about 6%. So that's how different it was.

Of course, that's the direct consequence of money. The rich countries could borrow essentially at 0 interest rate with no impact on their credit rating or anything. It was basically magic money-- and understood as such-- which allowed them to do whatever it takes that propped us up. But the rich country didn't have that option. If you are the country of-- you know, even India. It's not that you can go out on the international market and borrow, in order to spend on your citizens. It's just not possible.

So the only way for the poor countries to have spent more on COVID-19 stimulus measures would have to receive either direct aid in the form of a budget support or something that the IMF has really worked on-- but it's not even fully finalized now-- to, in a sense, get the authorization to create money via special drawing rights, which would be the equivalent to, the whole world can decide to emit more money-- which the IMF calls "special drawing rights." But when we do that, first of all, everyone has to agree to emit more special drawing rights. Second of all, once the special drawing rights are emitted, they are allocated according to contribution to the IMF, which is roughly according to the GDP. Which is that, this money was created, finally, sometime in May or June-- but anyways, allocated to country as a fraction of their money. So it went again in priority to the rich country.

And then they needed to do some complicated manipulation, to get it to give up their allocation, to give it to the poor countries, but they didn't. The US refused to. It didn't really happen.

So that means that this is something that we don't fully know, of course, the ramifications of the fact that poor countries were unable to spend as much to prop their economy. But it means that it ended up being a much bigger shock on the lives of people who are much more fragile to start with. Even though, at the beginning of the crisis in particular, the health shock per se wasn't that large in the poorer countries compared to the richer countries.

But that shows you the huge difference it means, to be-- a huge difference in life. Because of course, then it has implications, because countries that could not support their citizens during lockdown couldn't really do lockdown beyond a point. You remember the terrible third wave in India. For them, it was more like a second wave in India. And then in Indonesia. And in both cases-- and we have now one in Sri Lanka.

In all cases, it is known. It's not that these governments don't know that they should lock down. But they cannot, because they cannot afford it. Their citizens cannot afford it. So the two things are connected.

So these differences in GDP are coming also from-- have ramifications are important and that are really matters of life and death, in normal time and in the not-normal time we are living today. There are also massive differences in growth rates. If you take, for example, a difference between-- China grew at 6.5%. Burundi grew, in the same period, at about 0.15%, Pakistan at about 3% in the middle, like in Indonesia, and Kenya at 1.18%.

And you can see that these differences in growth rates are for countries that start at relatively similar level. So this is something that has, of course, puzzled and concerned economists across fields. There is a whole study of economic growth. And in a minute I'll go to various ways that people have marshaled to try to understand this difference rate in growth rate.

One thing I want to also point out, especially as I mentioned the difference in the quality of life between people in poorer and richer countries, is the fact that we shouldn't either be too depressed about the situation of the poor countries-- or maybe we can, now, post-COVID. But pre-COVID, in some sense, what happened in emerging economy over the last few decades is perhaps the best geopolitical news that there was. In an environment where there is a lot of discontent in rich and middle-income countries-- growing inequality, et cetera, one thing that happened to the poorest of the world is that they became less poor. If you're looking at--

This is what people called the sometimes the "elephant curve," because it has kind of a big back and then maybe that's the head and that's the trunk-- something like that. And it's looking at per-adult real income growth rate, over the last-- since 1950, per-adult income growth rate by income group in the world. And if you notice the axis, the axis is not-- it's logarithmic. So we are looking at the very, very, very rich here, and then, towards the beginning of the graph, we are comparing 10-- it's not even logarithmic, but it sort of stretches out towards the end of the graph.

So this is a part that you surely have heard about, in many settings, which is, over that time period, the top 1% have captured 27 of global growth. So your growth rate per adult real income-- real-income growth rate of the richest was 200% for the 0.00001% of the world. And really it's a story of the top percent-- and even more, perhaps, the top 1/10 of 1% of the world's population-- becoming richer and richer and richer. So we know that, just from living in rich countries.

But the other part of this graph is also interesting, which is, the income of the poor actually, in proportion, also went up more than that of the squeezed-up bottom-- 90% in the US and Western Europe. So the poorest people in the world, the people on the 20th percentile, 30th percent-- their income actually increased by 100% over this period, on average. Which is about as much as the growth of income of the top 0.001%.

So this was actually, of course, you know the-- China becoming much richer, India growing very fast, Brazil growing somewhat fast, that has caused that. Even pre-COVID, this was flattening out, because of China and India being now sufficiently rich. Yet you don't see so many of their citizens in the bottom 10%, so that elephant is slowly, slowly flattening itself out. But it's a very important story. Yeah.

AUDIENCE: Do you know if this graph is based on what their income-group percentile was a few decades ago or their income percentile as it is now?

ESTHER DUFLO: From the beginning. So it's the income of-- over this time period, the income of the people who were at the beginning from-- at each--

AUDIENCE: Thanks.

ESTHER DUFLO: So that's something to remember. And so you could say, well, this is China and India. This is a story mainly of China and India. But the story of the world getting better pre-COVID is a story that was not only China and India. First of all, there were a lot of extremely poor people in China and India, so that's a good thing even if it was just [? there. ?]

But the story of things getting better in the world is actually a little bit everywhere-- not necessarily in terms of income-- in African countries, I've had very diverse experiences from country to country; some have gone very fast and some not much-- but in terms of welfare. For example, if you look at the average years of schooling between 1950 and 2010, you can see a huge increase in years of schooling. And this is the average years of schooling, so, of course, this takes into account all the adults, so this moves slowly.

But you can see, as the map has more and more kids getting into school, today-- or, again, pre-COVID-- the vast majority of children were enrolled in primary school, vast majority of primary-school children in the world were enrolled in primary school. Literacy rate as a consequence has also changed. So this is looking at recent data, but by comparing the older to the youngest, where, among the old people, it's very red, not very many people are literate. But among the young people, it's much bluer.

Still along the getting better, the global malaria deaths by world region is on this picture. You can see that most of them are in Africa, but it's falling down at incredible speed. And those gains, they are gains that happened even in places where GDP per capita almost didn't change. So there have been gains in the welfare of people coming from better policies-- coming--

And so that's something that's super interesting to understand why did it come about, from a geopolitical perspective, that there was more focus on these issues. And more ability to deliver, as we move along. As a result, you have a decline in children's mortality, particularly fast in low-income country.

But unfortunately the question now is, what's going to happen? And that's what we don't know. That's also why it's a particularly maybe fascinating time to study development, because the next-- I think we have a better sense of what the next few years will be in this country. I don't think we have any sense of what the next few years will be in poor countries. I don't have [LAUGHS] any sense. And understanding what is happening now and what has happened in the past and how people react to different situations is something that is going to help us say something about this-- and also maybe make it better.

So, pre-COVID, the projection was that the poverty rate was going to continue to diminish-- of course, at a lower rate, simply because the South Asian countries are becoming too rich, so they cannot contribute much to the poverty rate. They don't have very many poor people to contribute. And they were already a little bit pessimistic about sub-Saharan Africa managing to further go down, in terms of number of poor people.

And this is where we were before COVID. After COVID, of course, this has changed. These are also projections for the World Bank of what they called the "nowcasting." Which is, of course, the way we normally count the number of poor people--

Do you know how we count-- how they count the number of poor people? So if we calculate the poverty rate, how do they go about doing that? Yep.

AUDIENCE: You define a poverty line which is based on a basket of goods that people can afford and the price of that. If the household earns less than that money, that depends on the number of people that live in the household-- then that household is qualified as poor.

ESTHER DUFLO: Exactly. So at the international level, right now, the poverty line is 1.90, in PPP dollar. It keeps moving up, by the way. It used to be one, and then-- so that, again-- that's the same team that does PPP calculation, who does it.

And then you need to send people out to survey people. And what happened during the COVID-19 crisis is, all surveying stopped. So we don't really know how many poor people there are. [LAUGHS] The truth is, we have no idea how many poor people there are.

Because it hasn't been possible to go survey people in person. Most statistics-- for example, in India, the national survey organization, national sample survey organization, that is normally conducting large-scale survey every five years, and slightly smaller surveys every year, has stopped doing it. And even if they're doing it, the government is not reporting what they are doing anyway.

So it's been replaced by private companies that will provide you with household survey data that, who knows how they are sampled, et cetera. So that's not really a replacement. But we have completely lost the ability to even measure how many poor people there are.

So, because we hate to not be able to say things, even if we don't have the data, what the World Bank does is that they do what they call "nowcasting," which is, they predict how many poor people there should be, based on the country's GDP. So in a sense, these numbers are just a translation of the fact that we could have looked directly-- which is, the GDP of this country has collapsed. But with that in mind, so you don't-- one shouldn't take these numbers too, too seriously-- but with that in mind, of course, there has been a huge increase in the number of poor people in 2020, which hasn't let down in 2021.

Of course, we don't know what's happening next. And why we don't know what's happening next is that, at least at this point-- and that's one thing that I'm hoping, that some of the thinking in this class will help us think through is, we don't know whether this change in GDP and the change in individual standard of living will be transitory or permanent. In many cases--

For example, in rich countries, you can be fairly confident that, even if people are poor today, they'll bounce up and go back in the swing of things. But one of the things we are going to talk about a lot here is poverty trap, and the question, or the idea, that, possibly, being poor keeps you poor, and therefore that--

So we have no idea whether, at the individual level, there are poverty traps. So some of the people who were kind of just edged out of the poverty trap will kind of fall back up. And at a country level, things like education system, health system, will be able to catch up the generation that they have missed so far or not. Yep?

AUDIENCE: In terms of the historical improvement, how much do you think came from internal policy improvements? And how much came from external-- or external pressure on the countries to improve those outcomes?

ESTHER DUFLO: I think a fair summary is that nothing can come just from external pressure. If you're looking at-- from most countries in the world, the fraction of aid given as a fraction of GDP is minuscule. There are some very small countries that are also very poor, where it's a lot more important. But in the world as a whole, even in Africa, the fraction of aid as a fraction of the budget-- what do you think it is, actually? If we take Africa minus South Africa, which is a rich economy that doesn't depend on aid, how much do you think it is?

AUDIENCE: 20%?

ESTHER DUFLO: Sorry?

AUDIENCE: 20%?

ESTHER DUFLO: It's more like 12%. And that's without South Africa. So it's actually not that important, quantitatively, even for Africa. So the first part of the answer is that it has to come from individual policy and individual money. Fundamentally, this is where it has to have come from.

That said, it is true that there has been a global effort, starting with the Millennium Development Goals followed by the Sustainable Development Goals, to focus policy attention on some core welfare issues-- like basic health measures, basic education measures, et cetera. And I do think that this has helped countries, governments, in many countries to become a bit pragmatic in terms of their policy goals, in particular as far as health and education are concerned. So I wouldn't call it "pressure" in the sense of the UK coming to Ghana and say, you do this, or else, but more of a softer social norm at the level of the world, which is that these are important issues and a bit more pragmatism. I would also say-- and this is something we will discover as we move along-- that the quality of policymaking has improved, where people understand-- governments understand a little bit better what needs to be done? What works? What doesn't work and what they can do within their budget, and so on and so forth.

So the point of this class is to try and understand these massive income differences in three respects. Why are some countries so poor and some countries so rich? What are the particular economic problems that are specific to the poor countries and how we understand them? And, from a policy perspective, what could be done to solve a particular-- these issues that we just discussed, these particular market failures that arise because countries are poor?

So of course, some of the problems of the poor countries need to be solved in the rich countries. Like, COVID vaccination doses is something that, it's not really in their power. But a lot of the things that countries do is-- and this discussion we were just having-- is about what countries should do for themselves and what went right, what went wrong, and how we can do that. And of course, one question that I think we should keep thinking in the back of our mind-- not necessarily because we have an answer, but because it will help us think about [LAUGHS] the problems, is whether the COVID-crisis reversal is here to stay and what can countries do, what is within their power, to make sure it's not here to stay.

So as I said, this is a question that has been with us, understanding this these differences has been with us, for a long time. And for a long time, it was more of a macro field. Development economics was more about macroeconomics. And the idea was to focus on the aggregate income differences themselves and to try to understand where they come from.

So if you start with an aggregate-production function, you have, income is produced by some technology that we don't really understand. That's, like, the measure of our ignorance, according to a Bob Solow. And then a function of capital, and human capital, expressed here in little letters, because it's human capital per capita.

The idea of field called "development accounting" was to see how much we can explain from this simple macro-production function. If we can explain a lot, then that's great. For example, if we find that differences are mostly k , then it makes the-- one view is that the answer to poverty is simple. Just give more k , and if it's h , then give them more h , and we'll be good. If it's A , of course, we don't know, because A is what we don't know, so it's much harder what to do.

So that's related to the philosophy of the World Bank in the 1960s, where the view was the problem that poor countries don't have enough k so we need to build roads and we need to build bridges and we need to build dams and-- because the poor countries can't borrow. They are credit-constrained. So that will help them catch up. And then, maybe a little bit later [INAUDIBLE] the idea that it's more h , and so we can build more schools, and then that's going to solve the problem.

There's a famous paper from the early 1990s that showed that was very optimistic, about this model. They looked at-- they used data from-- cross-country data with capital and enrollment rates. And they found that they could explain 80% of the difference in income per capita across country. So if that's the case, then that's great. You know, everything-- there's so much you can do with the things you can measure and act upon.

Unfortunately, that has been revised, and subsequent work suggests that this was way too optimistic. Klenow and Rodriguez-Clare brought it down to 50%-- or (EMPHASIS) by 50%-- and then by 90% for growth. Caselli also went down to using-- probably has the best paper on development accounting-- said that at least two third is explained by A , which is precisely what we cannot explain.

So that's just in terms of accounting. That's just in terms of what's correlated with what, without trying to give any causal interpretation-- just as a matter of, is it the case that, when countries have more k , they are richer? But of course, this is also getting complicated by the fact that all of these things are collated and are jointly determined.

So, in steady state-- and this is the point that Solow made, in a sense-- that in steady state, it has to be that the return to capital is equal to the discount rate. Because otherwise people would buy more capital, and so people would save more, otherwise. So it has to be that the return to capital equalize. So if you give a lot of k to a country, then they are just going to save-- that's going to draw down the return to saving. People are going to stop saving and [INAUDIBLE] adjust to that.

So that would suggest that only A can really durably affect growth. So if that's the case, then you can't just do k . In you increase k below the steady-state level, the return will be low. People will stop improving-- and likewise for h .

Instead, you need to increase A , and that's all you need to do. And you will see that, even though that's the macro view, that idea is actually quite pervasive in sort of the mental model that people have, even in micro development. So we'll discuss education, where many people of a certain generation think that the best education policy is no education policy. Because if you invest more in education, people are going to reduce-- the returns are going to fall enough that people are going to reduce their own investment, and it's self-defeating.

So instead, you need to increase A , because A will increase the return to education. It will increase the return to investing in capital. And people will respond accordingly.

So where does A come from? One answer is that it's history. So that's what you're getting, say, from Daron's work and famously, in particular, the Acemoglu-Johnson-Robinson paper looking at the quality of institution. It depends-- but also the Shleifer-Vishny agenda. It depends on who colonized you, what they decided to do, whether [INAUDIBLE], whether they set up good institution or bad institution, et cetera-- whether you have the right kind of [? law ?] or the wrong kind of [? law. ?]

Another is that it's geography. That's a Jeff Sachs view of the world. So that's basically bad luck, if you're in the middle of Africa. The climate is very conducive to mosquitoes and all the disease they bring. You're very far from the sea. It's too hot. So it's going to be very difficult to go. That's it. So that's why, in the view of Jeff Sachs, all you can do is to really help-- you have to compensate people for the bad luck of being born where they are born.

So either of these, just from a descriptive perspective, there is one problem with all of these views-- is that, fine, but then those factors are fixed. Geography, of course, doesn't change much. And then who colonized you hasn't changed in a long time. So how do we explain the fact that Bangladesh is sometimes doing great, in terms of growth, and sometimes doing badly, in term of growth?

And this is something which is really true. There are huge fluctuations in country growth rates, from time to time, which can't be related to these factors because they are fixed over time. So maybe it's about variation in macroeconomic policies. If it's not just long-run factors, then maybe we can look at macro policies and see whether that varies growth rate of A . So what are those macro policies that we could look at? All of you.

Don't be shy. Usually, when I ask a question, I wait.

AUDIENCE: Trade policies?

ESTHER DUFLO:Trade? [? Certainly. ?]

AUDIENCE: Poverty [INAUDIBLE]?

ESTHER DUFLO:Poverty rates is more, I would say, an outcome than a-- but--

AUDIENCE: [INAUDIBLE]

ESTHER DUFLO:Sorry?

AUDIENCE: Quality of [? courts. ?]

ESTHER DUFLO:Quality of ports?

AUDIENCE: Courts.

ESTHER DUFLO:Courts. Yeah, quality of courts. That could change, yeah.

AUDIENCE: Amount of government expenditures?

ESTHER DUFLO:Government expenditure, or budget macroprudential policy-- that kind of things. How many schools people are building. You can have, in principal, a budget in education, budget in health-- you can have a long list. And of course, property rights, corruption-- [INAUDIBLE].

So in the 1990s, there was a huge industry of funding growth regression. There are a few issues with this approach. What are the issues? Yeah, Erin?

AUDIENCE: If you're trying to determine whether or not the policy needs to [INAUDIBLE] or net growth [INAUDIBLE] sustainable?

ESTHER DUFLO:Yes. There are issues of causalities. There are issues of-- because, for example, a country that certainly has much better governance can start building schools. They can also start controlling malaria. So you don't know whether this is malaria, the school, or the better governance that in itself led to better business climate that is harder to measure.

So all of these things typically, they move together in ways that makes it very difficult to interpret that. Even before you get to this problem, there are only 180 countries, and many, many, many variables, more than 180. So you quickly run out of power. You get into this-- so maybe machine learning can help you pick something or-- but one can see that, logically, it doesn't make much sense to try to estimate the effect of so many policies with so few countries.

In fact-- Sala-i-Martin, who was a little bit the king or the pope of that literature, brought it in a sense to its conclusion and its end, with a paper that's called "I Just Ran 4 Million Regressions." And so you run 4 million regressions, and you concluded I think that only savings rates really matter.

And as I already said, these policies are all endogenously determined, and therefore it's very difficult to separate. And even beyond that, just at a descriptive level, if you look decade by decade-- go back to my example of Bangladesh-- the policies themselves are very similar, from year to year, but the policy-- but the growth rate changes-- fluctuate a lot from decade to decade. So, just as a purely descriptive level, in growth rate there is very little explanatory power.

So the bottom line is that the growth-- [LAUGHS] it's not just us development economists who look at the macro literature and say, you failed in that issue. I think it's also the conclusion of the macro community itself, to say that they just cannot explain economic growth, based only on aggregate facts. That's all we have. We have to get within the hood, which is why we are starting the whole sequence in development by looking at micro and then we'll re-aggregate it from the ground up, in the second half of the semester, to think about a macro from sound micro principle.

So what's our issue? Well, one of the issues is that what justifies the aggregate production function is not the idea that there is one giant machine in the economy and one very smart worker with all of the human capital. That's not the image. Right? We realize that there are a lot of people who are each going at their own business.

So why can you even aggregate them? Why can you even write-- why is it even OK to write an aggregate-production function to describe the economy? What's the assumption that's under it, so that it's not just an image but it's something that actually makes sense?

Why can I go from MIT and Harvard and [? Twinkie ?] store, shop, and all of that and aggregate them into one US economy? Yep.

AUDIENCE: [INAUDIBLE] everyone is perfectly optimizing [INAUDIBLE] efficient [INAUDIBLE] because that way you're-- that gets your return [INAUDIBLE]?

ESTHER DUFLO: Exactly. It's that each factor gets allocated to its most productive use. So the marginal return of this investment is equalized. So even though there is not one big machine, we can think of it as one big machine because the economy is allocating the capital. So there is such a thing as the return to human capital. And there is such a thing as the return to physical capital. OK?

If, for some reason, that's not true, then we'll see some sector of the economy with a much higher return to capital and some sector of the economy with higher return to human capital. And this is actually entirely testable. Because what I just said, well, we can look. We can look at whether it is, in fact, the case that, within an economy, the return to investments are the same from place to place.

And the point is that it's not true at all. The return to capital and human capital vary enormously within countries. And if you remember the famous [? Lucas ?] paper, he was marveling at the difference in return to capital in the US and in India and said, why isn't all the capital going to the US-- to-- sorry. He was marveling at the difference in return to capital and thinking it's smaller than it should be. Because there is less capital in India.

But the point is that he shouldn't have been so surprised, because, within India, there are huge differences in return to capital. And yet the capital doesn't move from one place to another, let alone-- not even within India-- within one town in India [LAUGHS] do you have huge difference in return to capital. Within one industry of one town in India, you have huge difference in return to capital .

Abhijit has a paper with Kaivan Munshi on the town of Tirupur, which is the garment manufacturing-- knitted garment manufacturer. And they showed that there are two groups of-- they are sort of the local boys and the-- who are the descendants of a rich agricultural community and got into this business. And there are a lot of people from other towns who came to Tirupur when it became a huge capital. And when you look at the return to capital, it is much lower for the local boys than for the people who have come to the city.

So you might think, of course, it's obvious. The local boys are not particularly good at garments. They just happen to be there, and they do it like everyone, whereas the other people have been drawn to this place.

But once you've said that, well, you say, well, if you live in Tirupur and you have money to invest, why don't you give it to the strangers? Somehow, something stops you. Right? Here, what would stop them? Why, as a well-established Tirupurian with some amount of money, you would prefer to set up your son with a little company versus to give it to someone who just came and who is evidently super good at this job? Yes, [INAUDIBLE].

AUDIENCE: You don't because of trust? [INAUDIBLE]--

ESTHER DUFLO: Yes. You might not trust that you're going to get it back. So that's the return-- the market for capital is very imperfect. And that means that there are huge differences in return to capital that stays. This is, of course, something that-- I'm giving one example from one town in India, but it is something that has been documented much more broadly-- and in particular by a classic paper by Hsieh and Klenow which shows that there is huge heterogeneity in return and that it originates--

So this is the total factor-- this is TFPQ, Total Factor Productivity-- so, an idea of how productive a firm is. And you see that there is dispersion. It's not one. That's the first point. And second, that dispersion is actually greater in India than it is in China and the US.

This is also something that we need to explain-- that, why-- that we can think about, why are the markets not working as well to allocate the capital to its best use, so that only the firm-- only the most productive firms stay and the other ones disappear. That makes sense?

So where are we now? A fundamental source in the difference in productivity across countries is the fact that both h and k are misallocated, due to a number of factors. And a number of factors is [INAUDIBLE] what we are going to concern ourselves with, in this entire sequence. First we are going to look at whether, to some extent, it comes from poverty itself-- whether there is something fundamentally different about poverty which means that you can't accumulate your way out of poverty. So that's the idea of poverty trap.

Then we look at where h comes from and why this heterogeneity might persist-- why people are not investing optimally. So we look at education, health, nutrition-- so that's a lot of what I am going to be doing.

Then we'll look at heterogeneity in k . So we'll look at credit and savings and then land. And then allocation of the labor market. That's another-- we only put h , but h is really l times the education and health of each person-- the labor market itself, which is a super active area in development these days and super fun.

And then finally, we'll look at A , in the second semester specifically, looking at technology, organization of firms. We'll look at policies along the way--

Of course, when I talk about education, I'm going to be talking about education policy. When I talk about health, I'm going to be talking about health policy. But as Ben mentioned, there will be a special sequence at the end which will be specifically about the public sector. So that gives you a sense of very broad road map for the course.

Before I go in more detail-- we have about five minutes left-- I was going to give you some teasers. But before that, let me see if there is any question, comments, point of debate. Because what's coming now is not particular. We can go to it or not go to it, so I would rather make sure you have a chance to each express yourself. Going, going? Then I will speak.

So another view of the course, and a few fun facts. I'm not going to give you the entire overview, but I'm going to start. So we'll start with the idea of poverty trap. And the other question is simple. Is the fact that you're poor keeping you poor?

So why would it be the case? Well, because of what we'll come to know and love as the S-shaped curve. [? Well, ?] the S-shaped curve. This is from a paper by Clare Balboni, who is teaching here, and many other coauthors, looking at people who are extremely poor-- because they were part of a program to help the extremely poor. And some of them received a transfer that make them less poor. And they are looking at--

So this is not the impact of the transfer at all. This is something that is purely descriptive, where, on the x-axis, you have how much money in total they had in assets, including the transfer, in 2007, and then productive assets in 2011. So it's how much they grew between the two periods.

And you will notice that there is an interesting curve, here, which is S-shaped. So what does this mean? Suppose that you continue to-- you do a next curve that goes from 2011, 2015. Suppose the curve is the same. And you're trying to find out-- someone who started in 2007-- by 5 years later, 10 years later, 15 years later, where will they end up?

And suppose that's the law-- is that, if you start with this much money, you'll end up with this much money. OK? You understand the exercise? So take someone who starts with 2.6-- whatever it means, some 2.6 monies. In 2011, they have 2.7 maybe monies. How do I know how much they are-- how do I continue this to know what they'll have in 2015?

AUDIENCE: [INAUDIBLE]

ESTHER DUFLO: Yes? And then?

AUDIENCE: [INAUDIBLE]

ESTHER DUFLO: Yes. Going back to the x-axis. And from the x-axis, back up. So we can even skip the going down. But we'll have-- so in 2007, they start at 2.6. They end up here. And then to know-- so this is the level. So, to know how they have in 2015, I go here and then back up. And then 2000-- what was it? Even five years later, I continue-- continue.

So where does this end? Here, where they cross. All right?

And then someone who started here, in 2007, they go here, then they go here, then they go here, then they go here, and then there is a little thingy here, but then they end up over here. That's the steady state.

So that's the poverty trap. It's the idea that there might be multiple steady states-- that where you start from has an impact of where you end up. OK, we're going to go back to this. We're going to spend a lot of time to this graph. But that's something which is--

So why we don't have poverty traps in most of the models that we work with that are appropriate for rich countries is that we assume concavity. So this part of the curves goes away. So when people are poorer, the capital is very productive for them. So they're making more money out of the little money they have, proportionally. Then, therefore, they can progressively, little by little, build their nest eggs to end up all in the same steady state.

With the poverty trap, some people are so poor that they end up there, and they end up staying poor. And so the game-- or not the "game"-- the exercise-- is to think, where does it come from? And why--

This is, in a sense, a very reduced-form picture, but from real data, telling you in, Bangladesh there appears to be a poverty trap. Which, by the way, is the reasoning for this program in the first place, which is a program that was started by an NGO called BRAC and was expanded since then in many countries, with the idea that you cannot go big push. You give an asset to people, and you help them for a while, to help them push--

If a lot of people have been on this part of the curve, you try and push them. And what's underlying this picture, in a sense, is that maybe the transfer was not large enough to push the poorest of the poor who were in these villages even away from the poverty trap, so they fell back. While some of the people that pushed them up, and that produced long-term impact of this program.

So we'll start with that. We'll spend two lectures on poverty trap, one on thinking about theory, one on going back to this program and similar programs. Oops.

When we are done with that, we'll-- so first we'll try to spend some time-- so-- I've already showed my spoiler alert. There are poverty traps. On the other hand, why? Where are they coming from? That is something where there is still-- we still don't know. So it's like a super interesting, exciting area of research is, what causes poverty trap? There are many possible reasons.

Then we'll talk about human capital. We'll talk about the quality of education, the supply side of education-- in particular, the fact that the quality of education is terrible in developing countries. So I said at the beginning that a lot of people go to school. That's great, but they go to school and they learn nothing.

This is a graph that some of you might have seen. It's from the Annual Status of Education Report, in India, that looks at the fraction of kids in standard five-- so, end of primary school-- who can read at the level of standard two-- so, beginning of primary school. And you can see that not only it's not improving over time, it's, if anything, worsening over time. Of course, we have a lot of-- you can say it's-- and it's not just a composition effect, in the sense that it's not just because there are more kids in school and therefore the results are worse.

So we'll talk about education. We'll talk about health, obviously, both the supply and the demand. Then Ben will talk about labor markets, land markets, credit. Technology will actually be in the second part of the course. I'll talk about savings on the other end.

And finally Ben will finish with the public sector. What are the problems with redistribution? What's the optimal shape of transfer? Are there problems in providing public goods? Are there problems, labor-market problems, specific to the public sectors, with incentives and things like that?

So that's going to be the game plan for this semester. So I hope that you will continue to be here. I wish you an excellent semester, back here in person. And we'll have fun in this class.