[SQUEAKING]

[RUSTLING]

[CLICKING]

BEN OLKEN: OK. So just to remind you guys where we were-- so last time we talked about the basic setup of models of thinking about credit. So we had adverse selection, moral hazard. We had monitoring models, and so on and so forth.

And today, what I want to talk about is microcredit, microfinance. And in particular, just-- I'll give you a couple of words of background, some of the history of microfinance. We'll talk a little bit about the impact of microfinance, both overall its heterogeneous impacts, and then I'm going to talk about the role of particular microfinance institutions.

And what I want to-- I guess I want to emphasize on this piece is that, as you'll see, microfinance is kind of a bundle of many different things. And there's been a nice series of research papers over a series of years that tried to help us unpack what's in that bundle. And I think that you'll see some nice elements of that.

OK. So just a bit of background. So microfinance, the modern microfinance model, I guess, came through the Grameen Bank with Mohammed Yunus, who won the Nobel Prize a few years ago, helped create. And that made small loans to women in Bangladesh, to poor women in Bangladesh. I think, actually, these numbers are actually probably small. I think it's way more than $25 billion today, probably-- these probably are outdated. Hundreds of millions of clients, typically higher payment rates. Some microfinance institutions are profitable. Some are not.

And these microfinance institutions are-- they are lending to a large number of small borrowers and providing them small loans, $50, $100, $500, in that-- maybe up to $1,000. Maybe that would be a really big loan. Small loans.

And there's an idea that these can be really powerful for helping break some of the credit constraints that we talked about last time. So some of the stuff at the end of this-- some of the models we talked about last time would predict that people who are really poor would not be able to borrow anything or very little. And if there's a way to break those credit constraints and figure out a way to solve that, that could potentially be very powerful.

So I would say-- suppose we wanted to start by understanding-- and I say there were lots of grand claims associated with microcredit, right? So if you think of when Yunus wins the Nobel Prize, the idea is this microcredit thing has been totally transformative to lots of people and changed people's lives in lots of ways.

So if you were trying to think about trying to understand and evaluate some of these claims, what are some questions you'd want to answer? And how would you think about evaluating them? What are some questions you'd want to know about microfinance? This is now a question I'm posing to you. Yeah, Becca?

AUDIENCE: I suppose you want to know if they just substituted [INAUDIBLE] from some other form of lending?

BEN OLKEN: Right. So you want to know is, is the change in net access to credit, not just gross? So just the fact that people are borrowing from microfinance institutions doesn't mean they're getting more credit. What else do you want to know?

AUDIENCE: Maybe that individual that [INAUDIBLE] has access [INAUDIBLE]?

BEN OLKEN: OK, so, right, so what kind of outcomes?

AUDIENCE: Business profits.

BEN OLKEN: What's that?

AUDIENCE: Business profits, consumption.

BEN OLKEN: Right. Right. So it seems like one thing you would want to know is want to know is it about-- is it actually-- if you believe that people are credit constrained, that they aren't-- if we believe that we're in a world where basically people can-- if we're in a world where people are unconstrained, that in the unconstrained world, where you have f prime equals r, you'd expect the marginal return of capital is equal to-- is not super high. It's equal to the interest rate. But if you're in a world where k is constrained, then you might think that f prime is much greater than r because people aren't able to get all the capital they need.

So one thing you'd want to say is what is the impact of additional capital on people's profits, essentially? And like if you believe they were credit constrained, you might expect that thing to be really high. So that's one thing you'd want to look at.

You might also-- see, you may also then want to look at downstream consumption outcomes. Yeah, Becca, what were you going to say?

AUDIENCE: You might also be concerned about information or whether people are taking on loans that are actually in their interest or whether it's predatory in some form?

BEN OLKEN: Yeah. So what do you mean by predatory?

AUDIENCE: So if you are-- if people don't actually have good information about their odds of being able to pay back or the form of credit that they're receiving, that you would not want them to be needing to pay off some interest in the future because--

BEN OLKEN: Yeah. So I think that's also related to some of the consumption questions, but I think you're hitting another point, which is that we may not just be interested in averages. We may be interested in the distribution of effects, right? So it may be-- and we're interested in distributions, I think, in two senses.

The first sense is we're interested in just, is there-- what is the distribution of outcomes? So imagine that basically we had-- this is like outcomes. Imagine we had quantile treatment effects. There's a big difference in a world where basically we have a bunch of people with nothing and a bunch of both positive income effects. That's a world where actually we're pretty happy with this thing, and it's like nothing for everyone and good for some people.

Or if we had a world-- this is-- these are quantile treatment effects. Or if we had a world where it looks like this, where some people are a lot worse off and some people are a lot better off, even if this went really high so the mean was positive, you would feel very differently about this world versus this world, right? Because here, like nobody's worse off. Here, people-- some people are actually substantially worse off. And that goes to the idea that maybe some people can't pay back.

And if, by the way, you think of capital as-- access to capital as funding investments which may be risky, it's not crazy to think that you're in a world like this. Like, if these are positive expected return but risky investments, on average, people will be better off, but some will be worse off. And so understanding whether the world looks like this or like this is different.

And then in addition, I think, Becca, you asked another point, which is, it's not just that we're interested in the overall heterogeneity in the treatment effects. We're asking whether they're predictable or not. And so this is just saying, what are the quantile treatment effects, just in general. There's another question which say, do people-- is that predictable or not? And are people able to make good-- is it sort of that there's risk in the world? If we think of the model I talked about last time, this is a model of positive expected return activities, but risky, risky.

There's another world, though, where you start to think about some of the selection in the world, where people are different in their characteristics. Some people have really good things. Some people have really bad things. Can they predict them? Can the banks predict them? Can we explain that heterogeneity in a reasonable way? [INAUDIBLE]

AUDIENCE: [INAUDIBLE] take-up rates?

BEN OLKEN: Yeah. Say more.

AUDIENCE: So maybe a formal microcredit institution might set more restrictions on what you can use microcredit for, and perhaps that lowers the take-up rate relative to formal loaners who might not put such restrictions, maybe in deadlines or [INAUDIBLE].

BEN OLKEN: Yeah. Sorry. So, yes. Take-up-- absolutely. So are these restrictions reducing take up, and is that good or bad? You want to think about that? Ahmed, do you have a question?

AUDIENCE: Yeah. Conceptual question. Should I think similarly of the microcredit in developing countries and payday loans, say, in the United States?

BEN OLKEN: Yes and no. They have-- I think they have different characteristics. So they're both targeting low-income individuals. The payday loans are collateralized basically against your future paychecks, I think, whereas these are uncollateralized, typically. And we'll talk about how they ensure repayment, so they're different in that sense. They're similar. They both have reasonably high interest rates.

I think one question is whether the payday loans are mostly used for consumption smoothing, whereas these are mostly used for investment. That could be a really important distinction. So if these are screening clients on, do you have a small business that you're going to invest in, you might think those would have very different implications than if it's just available people who have really urgent consumption needs.

AUDIENCE: Follow up on [INAUDIBLE]. You mentioned that [INAUDIBLE] credit agencies are actually extremely profitable for companies. I want--

BEN OLKEN: Some are. Some aren't, yeah.

AUDIENCE: I wonder why. What was the economic friction that prevented microcredit [INAUDIBLE] 20 years ago?

BEN OLKEN: Oh. So, it-- one-- so, yeah. So this is-- so you're asking-- I would call-- this is the difference between a question that an economist in this room would class and-- ask and someone in a business school class over at Sloan would ask. You ask the question I always ask, which is, if this was new and profitable, why didn't it existed in the past? Like, it can't be-- it must not have been in equilibrium. That's the economics view.

The business school view is like, somebody had a good idea and made some money.

[LAUGHTER]

And so I say that actually not actually totally facetiously. I think that sometimes people just innovate. And come up with new ideas and make new businesses. And sometimes those things-- sometimes they were fundamental frictions, like you might have said, oh, it's technology, or whatever.

But actually, I wouldn't be shocked if, in this case, it was just innovation. Like, someone came up with some ideas and said, oh, we think we can basically big bang-- you'll see one of the things is that there's lots of monitoring costs. It's a question of-- big banks may have said it's not profitable to make these little loans because it's too expensive. And I think that some of these organizations figured out a way to do it. So I think it may have just been organizational innovation.

I do think one thing that's changing, and one thing, I'm not going to actually talk a lot now-- about now, but I think is an interesting kind of new wave, is digital technology and digital lending. And I think that actually fintech, and how do you think about using new technologies to solve some of these problems-- that may be something that's actually new that wasn't available in the past, and that may open up new opportunities.

I'm not going to talk about fintech today, but that is-- that's-- so this stuff is organizational. I'm not sure any of it-- why was it done in 1976 and not 1956? I don't necessarily know that there's a hard and fast reason for that, a fundamental reason. The fintech stuff where we're using your cell phone records as a way of predicting your income and repayment status-- that actually does rely on a technological innovation, which is new.

So why is evaluating this challenging? Why is evaluating microcredit challenging? It took a long time before we had good impact evaluations of microcredit. Wesley, you want to say anything?

AUDIENCE: Well, like, logistically difficult or like in the real world? For example, microcredit institutions, if they believe that this is a silver bullet, may not want you-- they have no incentive to have you evaluate them.

BEN OLKEN: Right. So that's point one, by the way. So vis-a-vis-- as long as they're profitable, or at least breaking even, they're good, right? They may think they're good. And so why would they want someone to evaluate them? So it's kind of risky for them. I actually think that's actually a fun-- an important point. And actually, I think convincing people to be evaluated is-- to evaluate themselves is actually really difficult. So that's part of it, especially if we're interested in not just-- like, they want to know what the impacts on profits are, but they don't need a rigorous impact evaluation to figure that out, right? And they may not necessarily want to know what the world looks like this, for example. That might be bad news for them. So I agree. That's part of it.

But then what else about-- what about designing the impact evaluations? What are some things that might be tricky? Yeah, Sean?

AUDIENCE: I think there's 50 different dimensions of impact so you'd have to know what to measure and on what timeline.

BEN OLKEN: Yeah. So you have lots of different outcomes, long timelines. So one of you, in your comments about-- that you sent in for today about the [INAUDIBLE] paper talked about GE issues. What did-- I don't remember who said that. I can look. Do you remember-- do any of you remember mentioning general equilibrium issues in evaluating these things? You're saying yes. Was it you, Sean? Maybe it was you, but-- no? Was it Becca or--

AUDIENCE: I can take a stab at it.

BEN OLKEN: Yeah, what?

AUDIENCE: Take a stab it.

BEN OLKEN: Go for it.

AUDIENCE: So if you're not satisfying [INAUDIBLE] in that if everybody in your village-- like, if some of the people in your village have access to microcredit and some people in the neighboring village don't have access, but as a function of a neighboring village having access they're being able to fund different investment projects, can boost up the availability of investment, profitable investments, available to you. And also--

BEN OLKEN: Yes, so say more. So you're saying something-- so I don't fully follow, but-- so say more.

AUDIENCE: You're trying to evaluate this by, for instance, allowing some villages to have access to microcredit and other villagers not. As long as there's some form of interaction between those economies, the-- you have network effects just by virtue of--

BEN OLKEN: Yeah. So the main issue-- actually, even easier-- yeah. The main issue is you're doing lending, right? But people are interacting with each other in the underlying markets. So actually, I think the village one is actually better. Imagine-- what would be the problem if you do this-- imagine you randomize people at the individual level and access to credit. What would be the problem with that? Yeah.

AUDIENCE: You usually have a surge in aggregate demand within the village and people would immediately start-- or I guess either on the supply side or the demand side.

BEN OLKEN: Yeah. So you're thinking-- so, right. So your view is you would understate it because-- so your view is you would understate the impacts because there would be demand effects, and that would spill over to the control group. Anyone think you would overstate impacts? Sean?

AUDIENCE: Yeah, because there's diminishing returns [INAUDIBLE] that you-- like suppose there's limited demand in the village.

BEN OLKEN: What?

AUDIENCE: Suppose there's limited demand in a village for something. And all the loans are for local, I don't know, retail shops, then if you get loans to one person, they can-- they'll grow a lot, but if you gave the loans to everyone, you're keeping the same--

BEN OLKEN: Yeah. Exactly. So I think you also have to think about what these people are doing with their money. So I think that you're right. There could be these demand-- Keynesian demand effects. But Sean is also right that there could be potential spillovers in terms of-- in the product market.

So imagine we're all making-- we're all selling the same-- imagine, we're-- what is an example? We're all fried rice vendors, use my Indonesian examples. We're all fried-- it's very common. It's super common, actually, example, is that people have-- they have little fried rice carts. And there's only so much demand for fried rice going around, so if I have a better fried rice cart and I can move around-- maybe I get a motorbike fried rice cart so I can zip around faster or something, I might just be stealing business from other people. If the demand for fried rice is reasonably inelastic in my village, it'll look like I'm doing great, but actually, I'm doing great at the expense of other people who didn't get the loan.

So I think that the-- you also have to think about these issues. And actually, I think actually that suggests that larger level randomizations, a village-level randomization or even subdistrict-level randomization is going to work better, where you-- better than an individual-level thing, where you have to worry about both these positive and negative spillover effects.

So I just wanted you to think about some of these issues. And there's another thing, also, which is if we think the heterogeneity is important, we need to think about measuring the heterogeneity and make sure we can measure the relevant dimension of the heterogeneity. And the paper you guys read-- I guess it was for last time, but we're going to talk-- we're going to see today was really about saying, is there real heterogeneity in returns? And as you saw from that paper, there's a lot of heterogeneity in returns. And thinking about can you measure that properly is really important.

OK. So I said, for a while, as I think someone pointed out, I don't remember who-- was it you, Wesley? Basically, look, the reason was as follows. We're profitable. We're doing good. Why does anyone need to-- why do we need to evaluate our impact? And that kind of reasoning was very powerful for a while.

And there are problems with this. Of course, number one is maybe they're not-- they may not be doing quite as well as they think they are. But number two is that as I think that Rick, as you pointed out, just because the fact that people are borrowing from microfinance organizations is not-- is actually good for them. And in particular, we have these negative people that could lead to debt trap and so on. So actually measuring these outcomes is really important.

And by the way, this is coming to a huge-- this has really been-- this question of, is this good or bad, has led to major policy debates. For example, there was a confrontation in Andhra Pradesh in India between the state of AP and the microfinance institutions, where basically, at some point, the state government said, this is a terrible idea, and basically, no one has to repay all their microfinance loans. And that whole sector went belly up in that state overnight. And actually, I think-- I believe Emily Breza and Cynthia Kinnan have a paper studying that incident, and what happened from there on.

OK. So there has been, however, a bunch of RCTs that then, after a while, tried to provide evidence on this. And there was actually a special issue in the journal *AEJ Applied* which put together six of these studies from India, Ethiopia, Mexico, Mongolia, Bosnia, and Morocco, all in one place and tried to harmonize them so people could see what they meant.

And they basically had two different designs. So one was this place-based randomization. And that-- the advantage of that one is to try to deal with some of these spillovers. So the idea is we're going to say, look, the microfinance organization says we're going to think about expanding to a bunch of places.

We're going to pick more places, and we're actually going expand to, and we'll randomize them. Maybe we'll randomize the order of rollout, for example. That's actually a pretty common one, to say, look, you pick the places you're going to go. You can't open them all up at once. And we'll just randomize the order of rollout. That's actually a very nice design that gives them some flexibility to control where they're going, works with their business plans, and operates on this dimension they're indifferent between, which is the order.

Another one is this idea that's randomization on the bubble. So the idea here is that basically, the MFI scores applicants in terms of how excited they are to lend to them. And then rather than-- you could just have an RD on some cutoff, or another thing you could do is say, look, the ones that are really awesome you lend to. The ones that are not really awesome-- that are really terrible, you don't lend to. The ones in the middle, then maybe we'll randomize. And they also can be-- because they're roughly indifferent, they can be open to that, too.

I think both of these are useful, by the way, as you're thinking about experimental design because both of these are-- one kind of problem you have when you're often designing experiments is you would like to randomize over an entire population. The person you're dealing with is like, no way am I going to do that because that would involve making a bunch of really stupid loans or forgoing a bunch of really great loans. Both of these have this-- both of these designs have the feature that you're exploiting the fact that-- you're figuring out what they're roughly indifferent on and doing that.

And you should just be aware of that-- in general, if you're ever in the world of trying to negotiate what a possible randomization is, is just because you wanted to run a randomized experiment does not mean your partner has to give up all control whatsoever. They can say, yes, we want to do it here. No, we don't want to do it over there.

Where are you-- the key is where are you roughly indifferent in terms of either place or time or something. And maybe we can randomize that. And that's certainly an approach that I've found some success with as well in very different contexts.

Another thing that's really important is takeup rates are not really enormous. So that's not surprising when you think about it. Like, if I came to your town, wherever you guys from and said, hey, I'm opening a new bank. I'm opening loans to start a business. Like, what fraction of people in your town do you think would be like, oh, I'm really excited to take up this loan. Some people would, but not-- but it's not going to be everybody. It's going to-- and in fact, the take-up rates look more like 10%, which actually, I think, is pretty big when you think about it, but small as a fraction of the overall population.

So why is that an issue for these designs? Aaron? [INAUDIBLE]?

AUDIENCE: Well, if one of the key things we want to look at is heterogeneity, then just-- it's going to be very hard to have power to do that, you know, to take out this loan?

BEN OLKEN: So, yes, that's true. Not a lot of power of heterogeneity, but how about just for the overall impact? Why is this a problem for just estimating the overall impact? Patrick?

AUDIENCE: Might self-select if they believe it will have a bigger impact--

BEN OLKEN: So you're going to get self-selection. That's true. But that's OK. You're going to get the relevant-- you're going to get the impact on the people who are interested in being treated. It's a relevant lead. Becca, was that what you were going to say, or something else?

AUDIENCE: Oh. Oh, yeah. I guess it just sort of [INAUDIBLE].

BEN OLKEN: So related to what?

AUDIENCE: Power.

BEN OLKEN: So say more about it.

AUDIENCE: So if you have really low take-up, even if you are-- the treatment was being induced or given the option to use it, then you need to do some sort of [INAUDIBLE].

BEN OLKEN: Yeah.

AUDIENCE: --measure that effect.

BEN OLKEN: Yeah.

AUDIENCE: And that's going to be-- you're going to lose a lot of power.

BEN OLKEN: Yes. Exactly. So that's exactly-- yeah.

AUDIENCE: Why is power concerning if the costs are dependent on--

BEN OLKEN: If what?

AUDIENCE: Why is power concerning if our costs of operations are dependent on how many people take it up? So--

BEN OLKEN: OK. So it's a great question. So why is this a problem? Why is power concern? OK. Now I have to do the-- which class did I explain this to? I did not explain this in this class yet, right? That was in the other class, right? OK. Good. All right.

AUDIENCE: You did it in this class.

BEN OLKEN: I did it in this class. Right, OK, good. Then you should know the answer. So why is it a problem?

AUDIENCE: No, I'm asking why power [INAUDIBLE]--

BEN OLKEN: I can never remember which class I teach this in, same basic ideas.

AUDIENCE: If take-up is only 10%-- because it seems like your costs are also not-- are only being applied to 10%, so you could just expand the program if your costs are lower because of this take up.

BEN OLKEN: Right. So you're right. So that's the question. Why would I-- so, OK. So if I already went through this, we can ask the question again. Why would I rather have 100% take up on a sample of size 100 or a 10% sample-- take up on a sample of size 1,000? Like, which is better?

AUDIENCE: I mean, yeah. I do get that the smaller sample [INAUDIBLE] would be better. But you would partially address that with a bigger sample, right?

BEN OLKEN: But no. That's the whole point. So you would have to have a much bigger problem. So that's the whole point of the calculation I went through before is that in order to get a take-up of 100% on size-- 100% on size 100 is equal to, I think, 10% on size 10,000. Not on size 1,000. That's the point. Because the square root of n issue. So you have to go-- in order to deal with low take up, you'd have to have a really, really big sample size because of this point about the square root of n. Which I did explain in this class, yes, OK. Right? So that's the point.

So the fact that the first stage-- is really low means that the-- it can be hard to [INAUDIBLE] effect. So what's the right solution to this problem? So you want to do-- by the way, so you want to do a cluster randomized design for the reasons we talked about, so you have to do spillover. So how do you deal with this issue. Yeah, Paulo? You--

AUDIENCE: You-- in different villages or even within the same village, first figure out who would be interested in getting a loan, and then randomize who you give the loan to?

BEN OLKEN: Well, you don't want to randomize who you give the loan to because that would have the general equilibrium problems we were talking about earlier. Sorry. Say something else?

AUDIENCE: Randomize-- do exactly what Paulo said, and then just randomize the village.

BEN OLKEN: Exactly. So, right. So therefore, what you have to do is you have to get baseline data for everybody, figure out their characteristics that are going to predict take up. Then you randomize at the village level in order to deal with the general equilibrium issues. But you're going to look at the impact for people who are likely to take up. So you can predict take up from your baseline survey. And while 10%-- maybe only 10% in general, maybe if you ask a question of, if someone were to offer you a loan, would you take it? Maybe you can get 50% or 80% take up on that subsample. And that's the strategy on how you have to deal with that issue. Is that clear?

AUDIENCE: I don't think I understand.

BEN OLKEN: So the key point here is that it's 10% on average, but what I want to do is make an ex-ante restriction on my sample such that the take-up rate, which I can do equally in the treatment and the control areas, such on that restricted sample the take-up rate is really high.

So imagine I do a baseline survey and I ask you-- suppose a microfinance institution was to come into this town. Would you take out a loan? So people who say yes to that question, the probability of take up is going to be-- conditional on offering it is going to be like, I don't know, 80% or something. Not 100%, but 80% or something. That high number.

So then what you can do is you can-- you run that survey at baseline in treatment and control areas. You restrict your analysis, then, to people who are in that high predicted take up category and then put it in the control group. So you're doing it on a baseline question, so you're making the same restriction on treatment and control areas, but you're going to have high take up on that subsample.

AUDIENCE: So you're still just randomizing it, though.

BEN OLKEN: You're still randomized at the village level, but you're able to run your analysis on the people for whom you expect predict to take up to be really high. Is that clear? So that's kind of what they do.

And so what they find is they find basically-- they find-- in general, summing up across all of these things, I would say they find, on average, not much on consumption, but they do find some heterogeneity of impacts. And those are focused on people who have the existing businesses.

And I think at some level, that's not-- that should not be surprising. Like, what is this-- this was actually kind of surprising at the time because everyone thought this thing would radically transform poverty. It doesn't do that. What it does is it gives capital to people who have high marginal returns capital. And those particular individuals can grow their business. And that's-- people who have existing businesses may be the ones for whom the capital is going to be most useful. And so that's, I think, a summary of some of the impacts.

So one thing in particular I'll note is there was a meta analysis by Meager, who's also a student here, which came out a few years later in *AEJ Applied.* And she basically said, look, there are seven different studies. How can we say something about how similar or different they are?

And the thing she wants to grapple with is that basically, there are differences you observe across sites. Are those due to a-- I see some differences. Those are due to a combination of just sampling noise. If I have a sample, that's regular standard errors, or it could be that they're drawn from different distributions. Maybe the thing really works great in Indonesia and it works really terribly in India, or vice versa, or whatever.

Let me actually-- I think in the interest of time, I think I'm not going to go through this in a lot of detail. But let me just basically say, she has a hierarchical Bayesian framework for thinking about this. Yeah. Let me actually not go through this in detail. But let me just note that if you're interested in these issues of how do you combine across places, you should go-- you should have a look at her paper, which helps you think through how do we think about this stuff.

So let me not go through that in a lot of detail. But basically, they show not much-- not massive average impacts, but there are, I think, bigger impacts in general across these various studies for people who had prior businesses, which is what's shown here. This blue graph is the ones where people who don't have prior businesses, and in general, the distribution of outcomes look shifted better for people who had prior businesses, which is consistent with what we thought before, that basically this is providing more impact to people who have businesses. Yeah.

AUDIENCE: Just a quick question for framing. What is the size of a microfinance loan in general.

BEN OLKEN: I don't know the actual numbers, but examples I would give-- anywhere from $50, $100, $500, to up to $1,000, I would say. In that ballpark. They may go higher than that, but those are typical. I think the example you guys read in the Hussam paper was, like, $100. Those were grants, not loans. Those were, like, $100, right? So I think that-- and those are not atypical amounts. Yeah.

OK. So in general, I would say what all those impact evaluations showed was that for the average borrower in the sample, it didn't do very much. But there were two important caveats. Number one, those were-- the sample-- there may be a sample selection here. Like, if you think about the designs I talked about, most of them were selecting on more marginal cases where the bank was indifferent, either people or places. And number two, there was this substantial heterogeneity.

So that leads us to the paper that you guys read, which is if heterogeneity is important, what else is predicting returns? And people know what's going on here.

So that leads us to this paper by Hussam, Rigol, and Roth that you guys read for today. So just to make sure everyone-- just remind everyone what this paper was, this was-- these-- actually, these were all graduate students, actually, here, when they were working on this project, as some of you-- at least some of you picked up in your reading.

So what Reshmaan, Natalia, and Ben did is they-- and I should say, by the way, one thing I think was kind of interesting is just as-- how this paper came about, in some sense, this paper, I think, builds on the targeting paper that I talked about three or four lectures ago and that we said, look-- and they said, look, there's local-- there's clearly local information for poverty targeting. That's about-- but that's about the level of people's income.

But maybe if people know something about the level of people's income, they also know something about their marginal returns. And that's-- it's a harder problem. It's much easier to know about the level than about the returns because the level I can just look at. The returns is like a counterfactual. But in some sense, I think part of their idea is saying, well, look, we're interested in micro finance, but can we take these ideas from this other setting and adapt them here?

And so it's also, I think, an interesting example of how there can be intellectual arbitrage from one field to another field. I think-- I do, having been here through this process, I think that was partially how that came about, which I think is really interesting, and I think can maybe be relevant guidance for all of you.

So, OK. So what do they do? So they asked entrepreneurs in peri-urban Maharashtra to rank their peers, groups of four to six people, on metrics of business profitability and growth potential. And then they randomly distribute cash grants of $100 to a third of these entrepreneurs to measure their actual productivity.

So why is it important to randomly assign this here? So why do they need this step of randomly assigning the cash grants? Like, why aren't they just doing this and looking at whether you can predict business profitability? Yeah.

AUDIENCE: You're trying to predict returns, not levels?

BEN OLKEN: Yeah, exactly. They're trying to predict returns, not levels. They're trying to predict what is the return to giving you an extra $100, not what is your average, right? So just to be clear, they're trying-- and this is an example where thinking precisely what the theory is important. Their goal is to predict f prime of k, not f of k.

So if they were interested in just predicting the level, that may be f of k. But they want to say, well, what's the what's the return? So to do that, they need to predict this thing at baseline, get this information at baseline, randomly shock some people with $100, and then say, what is the treatment effect of $100 heterogeneous-- and how does that vary heterogeneously based on this information at baseline?

Question. Do you think it's better to do a loan or a grant? They do a grant. Why do you think they may have done a grant?

AUDIENCE: Because it's easier [INAUDIBLE].

BEN OLKEN: Yes. That's exactly why. So they wanted to do a loan. So this is not a case where it was ex ante the optimal thing to do. I can also, having, I guess, been there through this process, their first idea was, we should do loans and see what's the return to a loan. And they spent a long time negotiating with multiple microfinance lenders over a period of a long time, and in the end of the day, couldn't find a microfinance lender who was willing to randomly assign loans in this context they were wanting to do it.

But they said, oh, actually, maybe the second best thing is we can do grants. And that's actually still pretty good because we can still get the thing we want, which is f prime of K. So we can get f prime of k directly rather than f prime of k minus k. They were still kind of relevant, both interesting parameters. And this one we can just-- if we can raise enough money to give out $100, then we can just do this ourselves.

And so I mentioned that also because I think that was also a nice-- they had this idea, and they wanted to do it. And the first idea was they should do loans, and they tried. And they worked with a bunch of microfinance lenders. There was a whole process. But then they were adaptable enough to say, well, that thing isn't going to actually work in reality. Can we find a way to answer the same question that doesn't rely on us convincing some partner to do something they wouldn't want to do? And that's how they ended up on grant.

So actually, the grants are totally fine and was a good example of adaptability getting there. Yeah, Sean?

AUDIENCE: [INAUDIBLE] for any reason we would expect the responses to those [INAUDIBLE]--

BEN OLKEN: What do you think?

AUDIENCE: Well, I ask-- why I asked the question.

[LAUGHTER]

BEN OLKEN: What does someone else think? Do we think loans and grants may be different?

AUDIENCE: I would think maybe the loan has more of an impact on capital?

BEN OLKEN: Huh?

AUDIENCE: Maybe the loan has more of an impact on the capital [INAUDIBLE] with it?

BEN OLKEN: Because why?

AUDIENCE: You have an incentive to return the money?

BEN OLKEN: Yeah. So I think that-- because you have to pay it back. Yeah. So you might think-- yeah. So I think you-- sorry, what were you trying to say?

AUDIENCE: That was [INAUDIBLE].

BEN OLKEN: Yeah. So you might think they're going to be different. Let's see. I think that-- so going back to the theory we talked about last time, would there be-- what would the differences there be? So if they're-- yeah, Becca?

AUDIENCE: I guess also, the stream of returns that you get and the timing of those returns [INAUDIBLE]?

BEN OLKEN: Yes. So the timing of the returns are going to be important, and we're going to talk about that in one of the papers that hopefully I'll get to later today, which is the-- you have to make sure that if it's a loan and you have to pay it back, you have to make sure it returns the money in time for you to pay back the loan. And so that actually-- that question of the timing of repayment can actually distort your investment choices, so that's important. Yeah. What else?

AUDIENCE: I don't see exactly how. I feel like it would change your risk, your choice of the riskiness of what you do with it?

BEN OLKEN: Why don't we then hold this thought till we get to the paper about grace periods, which is-- actually test this idea experimentally. Yeah.

AUDIENCE: But also, not everyone would take up the loan, whereas everyone would take a cash grant, right? So if it was selection into the loan, then you might see higher effects.

BEN OLKEN: Yep. Yeah. So that's right. So you might find-- so everyone's going to want the $100, and you're right. Basically, that may-- and that might change the result. So it might be that actually, what we're picking up here is who actually has a business and is-- has a profitable opportunity, whereas everyone would take-- whereas-- so they may not have heterogeneity in returns of a loan because that selection of the loan might actually get you some the selection of picking up. Yeah. Sorry, Aaron, you had something you wanted to say?

AUDIENCE: No.

BEN OLKEN: Becca, you still had something you want to say?

AUDIENCE: I think it was--

BEN OLKEN: That point. I think it also depends on the degree to which the loan has limited liability or not. So if you think about the model from before, in the model from before, if you're fully-- what you going to say, sorry?

AUDIENCE: Oh, sorry.

BEN OLKEN: No, that's OK.

AUDIENCE: Is it right to say that if you're able to properly estimate the hazard rate or the probability of somebody not paying back and their beliefs about not paying back, that you should be able to just give them a grant that should induce the same-- because the difference--

BEN OLKEN: No, I think-- I actually think the point you made, actually, about the timing is relevant.

AUDIENCE: Holding, holding that timing.

BEN OLKEN: No, because they may do different things with it. That's the point. Imagine I basically-- for example, we know that people often borrow to go to school, right? So that could be a perfectly reasonable thing to do with a loan. But if you have a 10-year repayment horizon, but if you have a one-year repayment horizon, that would be a terrible thing to invest your invest your thing on because you're not going to have any returns you're still going be in school.

AUDIENCE: Sure. [INAUDIBLE]

BEN OLKEN: Yes.

AUDIENCE: So assume that the payment horizon is 10 years and all of the things that people are investing in-- like, they would presume that they would probably make back the money before they would need to repay. If, on the limited liability point, couldn't you equilibrate to give somebody a grant that would be valued to them the same as-- based on their personal belief about the project working out and their--

BEN OLKEN: I'm not sure I see how. Maybe I'm missing something, but I don't immediately see that. How about I talk about it afterwards? But I don't quite see it. But, OK. So I think the answer is they're not quite the same for some reasons. People may do different things with the loan if they think they have to pay it back for these timing reasons.

They may be more-- if there's risk-aversion reasons, imagine that if you have concave utility, you're worried about the bad state, so you may-- if you're risk neutral, maybe it doesn't make a difference. But if you're risk averse, then I might think of, well, if I have to pay this thing back in the bad state, I'm going to be-- take something that's more conservative, where if I don't have to pay it back, then I'm not so worried about the bad state. So there are reasons. They are different.

And the selection point, I think, Hazel, you also mentioned was totally right. There are reasons these things can be different. And that's probably why they started with trying to do a loan if the whole point was to just think about microfinance, that was the first best. But I still think there's a lot they can learn from this, which is why they did this.

So then the key regression that they're going to run is essentially this one. So cash drop gets you marginal returns. Predicting is just how your characteristics predict your outcomes. And then the key thing is this interaction of predicted times cash drop, right?

They also want to say, is there additional information, or is this better than the machine learning approach? So they also say, let's predict your returns based on some machine learning approach. They take an auxiliary sample, some-- whatever. I don't know. Some training sample, like 20% or whatever. They predict your returns, your heterogeneous returns, based on your x characteristics. They then can take your machine learning prediction and horse race that against the cash drop prediction.

So there's two ways of running that regression. I think the way I would run that regression is to basically-- sorry this got cut off. I would put them in the same sample, in the same regression, and see whether or not-- that's the ML plus ML times catch drop times ML. So I would say, let's control for this and say, does this predicted thing have additional-- this local predictions have additional predictive power over this?

They, I think, if I remember it correctly, do it two different ways. They do a different way. They predict the heterogeneity, either just with the x characteristics or with the x characteristics and the local information and see which does better in this regression. So they run this regression, where predicted is either predicted based on just the baseline characteristics or based on characteristics plus these additional x variables.

I don't know if you-- I don't know if I have opinions of those two different approaches. Yeah, Aaron?

AUDIENCE: There's one question I had with this, in the paper, is a typical microfinance institution in this setting-- are their agents also embedded in the community? I guess my thought was maybe observables and this ML exercise is not necessarily the relevant benchmark, but rather, what is-- what are institutions doing in status quo?

BEN OLKEN: Yeah. I think that's a great point. So I think it's certainly the case that microfinance-- banks in general have loan officers, and their job is to find out stuff about you. And they interview you. And they say, do you look like you have-- is this business plan real, or is it not real? And maybe that's better than their ML.

So I agree with you. That would be an interesting thing to do, would be to get the banks to do that. You have to think about, how would you incentivize the banks to do that in an incentive-compatible way and actually really put effort into it. But I agree with you. That would be another interesting benchmark to run. Yeah, Becca?

AUDIENCE: So on Aaron's point, I'm a little bit confused. When you say, can the community identify for the entrepreneurs, are you asking-- it seems almost like the comparison that you're doing with the ML is saying, can-- is the community good at marginally identifying information beyond some baseline set of things that you would think would would predict entrepreneurs?

BEN OLKEN: That's what this approach.

AUDIENCE: Yes.

BEN OLKEN: That's what this equation says.

AUDIENCE: That's not necessarily measuring whether the community is good at-- is identifying [INAUDIBLE].

BEN OLKEN: Yeah. So that's right. So this is actually-- so when I was writing these slides, I-- this is the challenge with having your advisor teach your paper later. So I emailed them, and I was like, why are you doing it this way? Why didn't you do it the other way?

And the answer that I got back from them was actually on exactly at this point, that this equation, which I wrote down over here-- my approach is this equation basically says, do they have residual information? So the test-- if I do it this way, then when I run this regression, what I get from beta 3 is, is there residual information that the community has that the machine learning approach doesn't know? But it doesn't really tell you quantitatively how much it is.

Their approach that they're going to do this way, I think, tells you actually-- it does actually answer that quantitative question and says, look how much better is the overall targeting with this kind of combined approach of using all this information than if we just use the ML alone. So they're answering slightly different questions. I think that's why they went with this approach. Does that answer your question?

AUDIENCE: Yes.

BEN OLKEN: OK. Other-- so it's a slightly different question, and that's the answer. And each regression-- they both have-- they're both related. And I think if you get one, you're likely to get the other, but not totally. But I think that's why they did it. Ahmed, you had a question?

AUDIENCE: No.

BEN OLKEN: OK. All right. So what do they find? So the first thing is they ask whether or not people are able to predict things about-- whether they're predicting things based about other people's characteristics. So like, do they know their income, profit, assets? So digit span is a test of how many digit you can remember. If I give you a random set of digits, how many can you remember? And that seems to be a test of numeracy and things like that. So they seem to have a lot of information about people. That's what this says.

I think in some sense, this is the key graph. It's a little hard to read, but this is the predicted marginal returns from the people in the community. The black line is the outcome for those who lose. So in general, it's the case that those who lose have more-- those who are predicted to have higher returns have higher profits than those who don't. So your predicted marginal return is correlated with f of k in addition to f prime of k.

The gap between the red line and the black line is the heterogeneity-- is the marginal return of the grant. So everybody gets a return from the grant, but I mean-- whatever the error bar is here. But in general, it looks like everybody's getting a return from the grant. But the gap is bigger based on these high percentiles and the low percentiles, which says that people are predicting not just the level but also predicting the marginal return.

And that is what we see over here, which is that basically, this is winning the grant times the rank. And they basically find that those predictable heterogeneity, that people who are the-- have higher percentile ranks basically are doing better. And they can look at it nicely. In some ways, it's easier to interpret it just that they break into three groups, kind of dummies, like top third, middle third, bottom third. And you can basically see that the highest returns are coming from the people who are predicted to be in the top third by their peers.

And what do they do? They buy more assets. They also work they work harder in response. And they hire more labor. So they both-- they increase both their asset-- they both increase their k more and they increase their l and other people's l in their businesses.

And this is the thing I was just pointing out, which is this is the approach where I do-- where they take your prediction based on their observable characteristics and say, what's the heterogeneity and the marginal returns for the top and the bottom? And these is the ones that also include the rank. And the idea is that basically, these have some additional predictive power compared to the other ones.

And you can-- where this is a lot better in predicting income and profits, they both have some-- sorry. For income and log income, the ones with the additional percentile ranks is doing a lot better than the ones without. For profits, maybe there's some evidence that the control has some predictive power, although it's not as clear in all specifications.

So what does this mean? So I think it means that there is predictable heterogeneity, and local people in their community know it, maybe even above and beyond the observable x's. And then going back to Aaron's point, then there's a question of what do you do about it? Do you try to elicit it from the community? Do you try to have bank agents in and figure it out? It's not clear, but I think that the whole point is that basically there is a lot-- this heterogeneity in returns is really something that is predictable, and understanding how do you get the right people in and select that is a really important-- it's something that banks obviously spend a lot of time on. And it's something important moving forward.

Yeah, Kadesh?

AUDIENCE: [INAUDIBLE] when you think about it [INAUDIBLE] do we know anything about what that actually is? Like, basically, what is the sum of people [INAUDIBLE] drives the differences in returns?

BEN OLKEN: So I don't know that we necessarily know that because in some sense, the whole point of it is that it's-- there's predictable differences even above and beyond everything they can observe in the data. That's the point in the large part, is that we don't-- almost by definition-- the point of the exercise is there's an additional piece of it that is beyond what we can observe in the data, which makes it hard to answer that question. Yeah, Aaron?

AUDIENCE: I think maybe Kadesh's question is something I was wondering, too, is when people are ranking their peers, what are they thinking about? I don't know. It just seems like it's-- what is it that communities know that [INAUDIBLE]? I don't know if they did any kind of politic work to try to--

BEN OLKEN: So I don't know the answer to that question. As I said, it's a little hard to know because the whole point is it's something beyond what's in the data, so it's a little hard to know. I don't have a strong-- I don't have a great answer to that. Yeah.

AUDIENCE: Well, it's-- by not visible in the data, it's not-- if things aren't visible in a one-time baseline survey, correct, when I go to the shop [INAUDIBLE]. So things that look like surface quality stuff, people--

BEN OLKEN: It could be. It could be entrepreneurial ability, which is hard to measure. I bet if you thought about your-- think about your friends from college, for example. If you were to rank them in terms of their entrepreneurial ability, do you think there's heterogeneity there? And do you think that's above and beyond what you predict based on their grades? Like--

[LAUGHTER]

I mean, I don't know. Do that introspection. I'm curious what you think. Like, my guess is yes, but I don't know. And there is-- there's a lot of stuff that goes into people's personality and their business ability and whatever that may be really hard to capture in a simple survey or even a complex survey. Yeah, Becca? What?

AUDIENCE: LinkedIn does now.

BEN OLKEN: I'm sorry, what?

AUDIENCE: That's what LinkedIn does now. They ask people in your network to rate the relative skill of a particular thing of other people on the network.

BEN OLKEN: Do they seriously?

AUDIENCE: Yes.

AUDIENCE: Mm-hmm.

AUDIENCE: Yeah.

BEN OLKEN: That's super interesting.

AUDIENCE: Yes.

BEN OLKEN: Has anyone studied that?

[LAUGHTER]

AUDIENCE: [INAUDIBLE] implemented by an economist who-- yeah.

BEN OLKEN: [INAUDIBLE]

AUDIENCE: Yeah.

BEN OLKEN: What do they use that for?

AUDIENCE: So I think it is-- like, you'll ask a question that's, like, who would you go to for questions on [INAUDIBLE]? And then it'll give you three of your friends, and then you select one of them just because it's fun or something.

BEN OLKEN: Uh-huh.

AUDIENCE: And then--

BEN OLKEN: And then what do they--

AUDIENCE: [INAUDIBLE]

BEN OLKEN: And then they take that person and give--

AUDIENCE: This person is more skillful, and then--

BEN OLKEN: Whoa.

AUDIENCE: --I presume they sell this data to recruiters.

BEN OLKEN: Wow. Huh. I'm not on LinkedIn, as you can see.

AUDIENCE: Perhaps it goes into search results, and that's a freebie that you get.

BEN OLKEN: That's fascinating. And I would love to see someone study that if they haven't done it already. That's super interesting. OK. But it's exactly the same idea, that people seem to know stuff about their peers, and maybe we can-- maybe LinkedIn has figured out a way to monetize that. But I think it's super interesting. I'd love to-- that seems like a great topic for someone to study if they haven't already.

OK. So what I want to talk about-- is there any other comments you guys wanted to raise from the paper that you guys read, from the paper? OK. So what I want to talk about the last 20 minutes is the unbundling of microfinance.

So here are some stylized facts about microfinance. In general, default rates are really low. Not always, but in general, they've been pretty low. And the original Grameen-Bank-style microfinance model had many elements. They lent only to women. They had a weekly repayment schedule where you start repaying immediately.

As an aside, I think this is a little weird, right? Here's a loan. Go make an investment. And I want the first payment next week. Like, it may not be optimal. There may be reasons this is optimal. The reason I think they do it is they want people to get in the habit of repayment. I think that's the theory behind it. But as an investment decision, it's-- on the other hand, you can say, well, fine. I'm going to-- you need to buy a $1,100-- $100 machine. I'll give you $150. The first $50 you're just going to pay back to me in the first five weeks, then you're going to start getting a return. Maybe that's what they do. I don't know. Just saying, it's a thing.

They have group lending. So basically, you come into this microfinance organization in a group, and initially, in a lot of these models, you have group liability. So that means that Hazel and Whitney and I are in a group, and if Hazel defaults, I'm on the hook for it. So don't default. That was the idea, though.

So therefore, I'm not going to want to be in a group with them if I think they're kind of dodgy, so we solve the selection problem. And we solve the moral hazard problem because if she starts to default, I can go-- like, we're friends, and I can go bang on her door and be like, no, no, no, you have to pay this back. Otherwise, I'm going to hook for it.

So that was the thing. They had regular meetings where they met with people all the time. They had dynamic incentives. So basically, you had-- you started off with really small loans, and if you pay them back you get bigger and bigger loans. So the return-- the incentive for paying back was bigger and bigger loans.

They have credit officers, who basically are spending lots of time in these group meetings and talking to people and monitoring them and doing all kinds of stuff. And they have high interest rates, at least 20% a year, but often way higher.

So this is a bundle, right? And there's a bunch of fear-- we can tell stories as to why all of these things might matter and how and whatever. And I think there's been a series of papers that have tried to decompose them and say, well, we're just going to study this, or we're just going to study this, or so on and so forth, to try to understand, how do we take this giant bundle of stuff and figure out what's important and what's not and what's actually helpful and what's not or whatever.

And so I think it's also useful to see how this research program as a field has gone on because you can see people have been hacking away at-- chipping away at this big bundle to sort of like debundle it and understand what's going on here. Yeah?

AUDIENCE: [INAUDIBLE] incentives the same for profits than-- for profits and nonprofits?

BEN OLKEN: I don't know the answer to that question. In general, I think in all of them they want them to not lose money, but beyond that, I don't know the answer. Yeah, Wesley?

AUDIENCE: Just thinking about our conversation from last time. Is this last point of high interest rates something that an organization like Grameen Bank would evangelize as, like, this is what microcredit should look like, or is it just something that comes to be by the--

BEN OLKEN: Well, I don't think they're proactively saying, yeah, it's really awesome our interest rates are really high. That's not how they spin things.

AUDIENCE: Right. But-- if only because it seems like from our conversation from last class that this is a component of microcredit that would incentivize riskier investments than you would otherwise--

BEN OLKEN: On the other hand, they can't lose money, so that's the other problem. Maybe all this stuff cost money. Like, going back to the whole-- that was the point of the monitoring model. All this stuff costs money, and then if we have all this real costs and we have a really small loan, that gives you the high interest rate because you got to cover those costs with a really small base. So that's the-- that was the point of that-- sometimes that was the point of that monitoring model was to say, look, we have all these expensive activities. And they're basically fixed costs. And if we we have a fixed cost divided by small loan, that's going to look like a high interest rate.

AUDIENCE: But aren't a lot of these subsidized anyway?

BEN OLKEN: Not necessarily. A lot of them may be nonprofit. Well, it's not clear, but a lot of them are-- some are for-profit, and they just haven't made money. Some of them are not-for-profit, but they still got to break even. And so I think it's not, yeah. OK. So let me-- in the interest-- let me just pick a couple of these and see if they matter. Let me tell you a couple.

So one, because I'm not going to have time to go through all of them. One was about lending to women and said, look, is that a relevant thing? So this paper by De Mel, McKenzie, and Woodruff basically said-- it was actually one of the original cash grant papers. And they said, let's-- they worked in Sri Lanka. They basically identified 400 households who had a small business, not a lot of capital. And they randomized them to get a small grant of either cash or an asset of about $100 or $200, and they followed them up-- I think six months later and then maybe even five years later.

And the main finding was they had very large returns on capital. That's consistent with this idea that they were credit constrained, so that the returns looked like 60% returns per year, so really high returns. But they found in their paper-- there were no effects for women. They did some heterogeneous stuff, and they found no effects for female-owned businesses. So there's a main effect. Main effect times women is nothing.

So that actually says, well, maybe there was not something going on. Maybe there was something different with women's businesses. And there were other papers that had similar findings. And I'll just note that one interesting recent paper on this is a paper by Bernhardt et al. Which goes back to this paper-- by this Del Mel et al paper and says, well, what's going on here?

And they have an interesting hypothesis, which is their point is we shouldn't be looking at the business in isolation. We need to look at the whole household. And maybe what's going on is not that there are differences in men versus women as entrepreneurs, but what's going on-- maybe their whole intrahousehold dynamics are really important, and thinking about the whole-- actually we talked about intrahousehold issues. Maybe we should be thinking about them in the context of a household.

And in particular, what they show is that basically-- they show that-- they replicate the results in Sri Lanka that there's no impact on the female-owned enterprise. But they note that when the woman gets a grant, their overall household income is actually going up. And so what actually they argue is that basically there are-- you have to be careful about looking at these female-owned business.

And the other thing, I think, that they also look at, although I didn't bring that table, is they also show that actually, if you look at female-owned businesses where the woman is not part of a household with a man, where she's just acting on her own, that basically then her returns look just like the men's returns. So essentially what they argue is that what's happening is not that her business has lower returns, but in that household bargaining, if she gets the grant, maybe she channels into her husband's business, and her husband's business is the one that grows so in general their household returns are not so different. Yeah, Becca.

AUDIENCE: Are there restrictions that say that if you receive this grant, you need to demonstrably invest in your own business, or is this--

BEN OLKEN: I don't think for the cash grant one.

AUDIENCE: A hand off to--

BEN OLKEN: I think they're able to hand it off.

AUDIENCE: Yeah

BEN OLKEN: Yeah.

AUDIENCE: Is there a-- I don't-- [INAUDIBLE] if I give-- say the male entrepreneur [INAUDIBLE]-- the male household has his business. The woman has her business. If I give $1 to the man's business, what's the effect on the man's business, say, investment versus if I get the $1 to the women's business, to the woman, how much does the male's business increase its--

BEN OLKEN: Yeah, so I don't think they can totally look at that because I don't think they-- I don't think the data measured the man's business in that case. But they do measure household income, and that's where they can look at this.

AUDIENCE: Is that--

BEN OLKEN: So they don't have the-- they don't quite have, I don't think, the data to answer exactly your question. But I think that this is suggestive of that, that's what's going on. OK.

So I just wanted to mention that one briefly because I think-- I do think it-- because it illustrates this point that we have to be thinking-- when we think about these small household businesses, we should be thinking in the context of a household, which is making decisions across households in the same way we had plots and people were thinking about crop plots. You have to think about, what is the whole household doing? And actually, they point out that isn't this not thinking-- this whole paper points out that not thinking that through clearly actually led to very different kind of results. Yeah.

AUDIENCE: Isn't there also a-- even if they're not like literally getting their grant off,

BEN OLKEN: This was-- yes, exactly. Exactly. Exactly.

AUDIENCE: [INAUDIBLE] study [INAUDIBLE].

BEN OLKEN: Huh?

AUDIENCE: Previous study is sort of like useless.

BEN OLKEN: I don't think it was useless.

[LAUGHTER]

I think that-- well, first of all, the average effects are interesting. But yes, I think the point of this is not-- it's not that it's useless. I think the point of this study is to say, look, you want to understand these household issues, too. I don't think it was--

AUDIENCE: But you're really not measuring-- you're not even-- unless you're looking at women who are just the women in the household, you're really not even close to measuring the returns on these.

BEN OLKEN: Yes, that is the point of this-- yes, that is the point of this Bernhardt paper, yes. But like-- so, right. So I'm just saying-- but people-- this-- people-- they didn't figure this out until recently. But, yes.

AUDIENCE: Sure.

BEN OLKEN: But I think that's why this paper came out and was published in a good journal. So I think that-- it was to say-- and the reason I'm-- I thought it was worth mentioning is exactly this point, is saying, look, if you're measuring these household businesses in a context where people are making decisions across businesses within a household, it is important to take the big picture. That's, I think, the main point here. Yeah?

AUDIENCE: Is there a pulse take away from here in terms of-- if I want to help a family, which side of-- if I can help give grants to either the male-- the husband or the wife, is that a--

BEN OLKEN: That's a different question, which says, if we were to random-- if we had-- that's-- to answer that question, you have to have a different study, which is to say, I got to take-- I got to select a sample of people with both men and women and randomize who gets it and see what the outcomes are. So--

AUDIENCE: It's not [INAUDIBLE].

BEN OLKEN: I don't know of anyone who's run that study, although there are many studies in this area, and it is possible that someone has done it. And I don't know the answer.

AUDIENCE: Can we talk about the conditional cash transfer that did that?

BEN OLKEN: Cash transfers have done that for cash grants, yes. The GiveDirectly experiment does that in the context of cash transfers. That's one of their treatment arms. But that may be different for-- I mean, these were larger cash-- actually, that was pretty large, too, but they weren't restricted to entrepreneurs, people with entrepreneurial activities. So maybe for this entrepreneurial subset, it might be different. Yeah. Sorry, do you have a comment?

AUDIENCE: Oh. Is there also some concern, potentially, in-- I don't know if they're adjusting for this, but the industries that [INAUDIBLE] businesses versus men?

BEN OLKEN: I don't think they can do heterogeneity-- so what you'd want to do-- so you're absolutely right. So they're just running a regression of x equals treat plus woman plus treat times women, right? That's what that regression column 2 is. So you want to say, look, we also need to include plus industry plus treatment times industry, right? Not just industry dummies, but also treatment times industry because we may think there's heterogeneous returns if women are doing whatever.

AUDIENCE: [INAUDIBLE] lower returns.

BEN OLKEN: Yeah. Things that have low returns, capital is usually picking that up. Right. So you'd want to run that. Given that they only have 400 businesses or whatever, I'm sure-- I don't think they have enough power to run-- to include this specification. But you're absolutely right. That's another thing that you-- another hypothesis that you want to think about. Sure.

OK. Let's skip this one. So another study that this team of coauthors has looked at is this question of this fact that you need to start repaying the loan as soon as you get it. So you get the loan. You start repaying next week.

So is that-- as I mentioned, on the one hand, that seems really weird to me. Like, I'm going to make an investment, and it may take some time to get returns. On the other hand, some of the kinds of investments that people make look like I'm going to-- I have a shop. I'm going to buy some more inventory for my shop. It doesn't take really very long to actually start having returns on that, so maybe it's OK.

Or, as I pointed out, you can actually replicate the non-grace period version of this by-- the non-weekly-repayment version by just saying, look, I'm going to take-- if I got $150 loan, I'm taking the first $50, put it aside, and use it to make my first payments, and then I'm taking and invest the other $100. So with a slightly larger loan, I can replicate this kind of myself. So does this matter?

So what they do is they basically-- they run an experiment where they're going to nicely zero in on exactly this feature and say some people are going to get the normal contract where you start paying immediately, and some get a two-month grace period. Even this is not a very long period of time. But they get a two-month grace period to repay.

And I think what happens is kind of interesting. So-- sorry, what do you expect to happen? Someone else. Yeah, Paulo.

AUDIENCE: With the grace period, will make it like higher returns back on average, but perhaps--

BEN OLKEN: What?

AUDIENCE: You get higher returns with the grace period, but perhaps also more heterogeneity because people are taking riskier actions which raise the expected returns, but at the risk of losing it all?

BEN OLKEN: Yeah. Right. So-- OK. Someone else?

AUDIENCE: Might have a higher default rate in the grace period?

BEN OLKEN: Why.

AUDIENCE: Well, if the reason why you were doing it immediately [INAUDIBLE] you might have a reason to believe that a grace period [INAUDIBLE].

BEN OLKEN: Yeah. So if the whole point is this thing-- you might just have people get in the habit of default. It may also change your investment choices, and you may change different things. Other comments?

AUDIENCE: [INAUDIBLE].

BEN OLKEN: Heterogeneous effects by what?

AUDIENCE: So say some-- it will hurt some. Some people will not pay back, so you're adding behavioral biases. Some people really need to think about-- be disciplined about paying back in next week or so. But there's also a possibility that any investment opportunity that will take you more than a week to repay-- that you couldn't do before, now you will get do that. So the mean effect can be zero, but--

BEN OLKEN: But there may be increasing variance. Yeah, could be. Absolutely. So what do they find? So they find people do seem to-- they use more of the thing on their business and less on household expenditures. This is not totally obvious to me, actually, that this would be the case, that there's this discrepancy between how using the money for loans versus business. It wasn't obvious to me that would be even a margin or why that margin should necessarily-- why should you move from consumption smoothing to business investment?

Maybe the business investment-- I mean, the con smoothing never pays itself back, so that's not totally obvious to me that they would find that. But maybe in some broader sense, this is-- at least I understand what this is going to be like, and this is totally zero risk in some sense. Like, I know what it's going to be and I can plan for it, whereas this is more risky.

They also find that there are higher impacts on default. So people do default more when you give them the grace period. So it is the case that there's this trade off.

On the other hand, people's businesses actually do go up and their income goes up a lot more, actually, with the grace period. So I think that this-- this actually, I think, also illustrates that there may be a tension between what's good for the bank and what's good for the individuals, right? The bank does not care about your income. It only cares about it maybe if it cares about if it can charge higher interest rates to you.

But the bank just wants-- conditional on making a loan good interest rate, it wants the loan paid back. So the bank is going to take actions to make sure the loan paid back, even if that is necessarily not necessarily optimal for you. And that's just-- there may be this tension between these things. Yeah?

AUDIENCE: With this theory behind the default instead of being about habit being about risky behavior?

BEN OLKEN: Yeah, 100%. Absolutely. Yeah, absolutely. It totally could be about risk-taking behavior. I think it is, probably. I mean certainly-- we don't-- actually, I don't think we necessarily know. We know that people are investing more in their business, doing more stuff, earning higher incomes, and defaulting more. I don't think we necessarily know from this study, although I can't remember for sure-- I don't think they can differentiate between that the default is because it's increasing the variance of their outcome, sometimes it fails, versus this other direct effect of I get out of the habit of paying back or whatever. So I don't think we can differentiate between that. Yeah, Shannon?

AUDIENCE: Does the experimental design allows different people to select [INAUDIBLE]?

BEN OLKEN: What, sorry?

AUDIENCE: Does the experimental design allow for different groups of people to select into--

BEN OLKEN: I don't think so, but that's a good question. I don't remember it well enough to say, but I'm pretty sure they randomize it after people take up. I think it's a surprise, so I don't think it has a selection effect. But that would be interesting. You could imagine that it could be important. I don't think so, but I don't remember 100%. That's true.

Other questions? Yeah, Ahmed?

AUDIENCE: On average, nonbusiness spending decreases, but I wonder-- if the increase in nonbusiness spending predicts default, the behavior [INAUDIBLE], in a sense.

BEN OLKEN: Yeah. I don't know how you'd identify that. These are some other characteristics that would predict heterogeneous response.

AUDIENCE: Is it just like [INAUDIBLE] predict [INAUDIBLE]. It wouldn't be causal?

BEN OLKEN: Yeah, I'm not even sure I would run that regression, but I think you would need some other kind of x variable that predicts that. I'm just about out of time, so let me just-- let me just sum them up by saying that people have gone through some of these other characteristics I mentioned. I'm not going to go through them in detail now.

But you should look at them if you're interested. I think they went through group lending. They went through group lending. They went through some other things. People have systematically tried to decompose that list and understanding which of those things are important. And I think it turns out it's a lot more nuanced than the initial view from the Grameen Bank, which is you have to have this whole package or nothing.

The final thing-- I'll just mention some other topics in credit. One thing we haven't talked about, which may come up next semester, but maybe not, depending on how much time they have, is local Indigenous institutions, so Rotating Savings and Credit Organizations.

So one thing people sometimes do, if there's not a formal credit, is they'll get together and say, well, look, maybe we're all going to put-- every month, we'll get together. We'll have a meeting. We'll all put $10 in a pot, and we'll take turns who gets the $10. And you can think of that as-- that's a rotating organization, where-- so sometimes you can think of it as a credit organization.

So the first person, in some sense, is getting a loan of $120-- if there are 12 of us in the, $120, which they're repaying over time by putting it into the pot later. And these informal institutions are very common throughout the developing world. And people have studied those to try to understand those as well. So I wanted to mention that.

I think we're going to talk about demand for credit. This, we'll talk about it a little bit more, probably not in our station. Probably next semester. So I just want to mention understanding people's demand for credit. I guess we'll talk about that next semester.

And we'll talk about some more stuff on banks as intermediaries and credit constraints for larger firms next semester.

So I'm going to wrap up here Thanks very much. It's been great talking to you guys this semester.

[APPLAUSE]

Thank you. And I've left you five minutes or so to go fill out your teaching evaluations. So we very much appreciate that. OK. Thanks.