

[SQUEAKING]

[RUSTLING]

[CLICKING]

BEN OLKEN: OK, hi, everyone. All right, so today, we're going to try to finish up the various labor topics so that we can talk about credit next time. So to remind you guys where we were at the end of last class, we were talking about labor supply. And I want to talk about a bunch of different issues about people's labor supply decision.

So the first thing that I wanted to talk about was this idea that basically, if people have less ability to smooth, that's going to make their labor supply less elastic. And the consequence-- this is what I talked about at the end of last lecture-- is that if we're in a world where this is labor demand, if we have a world where we have, say, relatively elastic labor supply compared to if we have relatively inelastic labor supply, and we have a given labor demand shock, that the inelastic labor supply is going to basically mean that wages are going to fall. Wages are going to fall more than if they're were in a world with more elastic supply.

It's pretty intuitive. But what that means is that there's an externality from living around a bunch of other people who are inelastic. So conditional on what you're doing, if everyone else around you is inelastic, that means that those shocks are going to potentially hurt you more through this kind of wage channel.

And that's what Jayachandran wants to examine in her paper. So what she's going to do is she's going to look-- so in general, this should be familiar to you. But it's not, if you want to estimate the slope of the labor supply equation, you need an instrument for labor demand. That's the basic idea.

So she's going to use rainfall shocks as an instrument for labor demand. And then she's going to basically estimate this regression over here, which is basically-- so she'd like to have-- A is some measure of labor demand and S is some ability to smooth. And so the question is, how does the people's ability to smooth-- how does that affect the responsiveness of wages to the labor demand shock? So it's an interaction effect.

And just one thing you know-- whenever you see these interaction equations, if you have control variable X , you also have to include the control variable interacting with the variable of interest. Because if you just include the control-- the way to think about it is we think that, say, S , our ability to smooth shocks or whatever, may not be randomly assigned, say, or poor, rural districts or whatever may have less ability to smooth. And just controlling for the fact that the district is rural doesn't really help.

We need to control for the fact the district is rural interacted with the same shock. Because only once we do that do we get the interpretation that this interaction is kind of residualized after controlling for this variable. So whenever you have-- so I just want to mention that.

That's a pretty common mistake that we often see is that people will say, oh, I have some variable I'm interacting. I am concerned that it's potentially other things. I'll include those things as controls. But you also need to include the controls' interacting as well. So I just wanted to mention that.

The other thing that sometimes comes up, which I just wanted to mention is, what do you do if you're instrumenting for a variable with an interaction? So in this case, we'd like to say the endogenous variable, say, is productivity, or output, or labor demand. This is productivity or output.

We're instrumenting this with a rainfall shock. So what do you do if you're interested in the interaction? And the answer is that you create interactions with the instrument and the endogenous variable.

So in this case, she's going to have, say, three endogenous variables, A_{jt} , S_{jt} times A_{jt} , and X_{jt} times A_{jt} . And she'll have three instruments-- rainfall shock and the interaction of rainfall shock with this variable of interest you're smoothing this and with the X variables. So that's not magic or whatever, but I remember distinctly being confused about how do you do that when I was in your shoes. So I wanted to point that out. Clear? Questions?

All right, so then substantively, what's the point? What does she show? Well, the first thing she's going to show is she's going to show a first stage so that in general, the rainfall shock does lead to more-- rainfall shock is defined as 1 if it's good rainfall, 0 if it's average rainfall, and minus 1 if it's bad rainfall.

So positive is better rain. So positive rain basically does lead to more crop yields. And it does lead to higher agricultural wages. So that's the idea right there.

So then, what you can basically do is you can then look at whether or not these are then worth instrumenting for the crop yield with the rainfall shock. Oh, sorry, I should say, by the way, this has district-fixed effects and time-fixed effects. This is a normal kind of difference in difference kind of regression. Identified using the fact that different districts have different rainfall shocks of different periods of time. So it's only going to work in a big country like India, where it's big enough that you have different rainfall shocks in different places over time.

So what do you find? Basically, in general, she finds-- she has several different measures of ability to smooth shocks. One is whether you have access to banking.

One is whether you have a different access to ability to migrate and go to other areas, like railway service, or bus service, or things like that. The other is whether people are just poor, with the idea that being poor also might make you closer to this consumption floor, and therefore, make you have less elastic. And all of these interactions are negative, which basically means that the labor demand, which is basically consistent with this idea that the labor supply curve is less elastic. Sorry, is more elastic, sorry, in places that have more ability to smooth.

Sorry, Wes, you look confused? Is that clear? So the wage effect is smaller, so it's just going back here. The wage effect is going to be smaller in places where we have more elastic demand.

And she's basically finding that basically, the wage effect is smaller in places that have more access to banking, more access to other areas, or where-- sorry, these are the two I want-- more access to banking and more access to other areas, more ability to smooth, sorry. This one actually I think less on poverty, actually.

So that was one point I wanted to make about labor supply. A second point I wanted to make about labor supply is kind of a recent paper by our colleague Frank Schilbach and some co-authors on whether or not poverty has a direct effect on your ability to be productive through a behavioral channel. So I don't remember how much Esther talked about this in the poverty trap section, but one of the ideas of poverty traps is that poverty could make you less productive through a nutrition channel.

If you can't eat enough to get enough calories to actually work hard, that may make you earn less. And that can lead to a poverty trap. And some of the original poverty traps had this kind of nutrition channel.

A more recent idea is that there may be a cognitive relationship between poverty and productivity, and therefore, your ability to earn. That could also kind of have similar kind of poverty trap implications. So this paper is not going to actually argue that there's a poverty trap, in the sense that it doesn't say this elasticity is large enough to generate multiple equilibria. But it is going to look at whether or not there is a relationship between your cognitive concerns about poverty and productivity.

And I just want to remember, Frank did not teach this paper during the payroll session, right? No? OK, good. So I just had a thought of like, oh, my gosh, I'm repeating myself or repeating ourselves.

So the question, though, and what's tricky about this paper is how do you distinguish between a cognitive channel and actual just overall kind of being poorer. So what they want to do is they want to really isolate like-- sorry, between-- so let me explain more of what they do. And in particular, what they're going to do is they're going to-- so let me explain that in a second.

One thing I want to note about this paper is this paper is a different style of research than a lot of the other papers we see. And it's a style that I feel like I've seen a lot of in the last five years or so. And so it's something that people are increasingly doing, so I wanted to mention it and get your thoughts on it.

So in some sense, what they're doing here is they're going to create their own workplace where basically, they control everything. It's not like a lab. It's more kind of real world than a lab.

They're going to bring people in. They're going to hire them to do real tasks. They're going to work there for a month. They're going to pay them real wages.

So it's not just a lab setting, where you're bringing in whoever for a few hours to do some kind of very manipulative task. But it's also not quite like operating things in a totally naturalistic environment, either. But the advantage of this is that they completely control everything about this condition because it's their workplace. So they're the employer. And so they can fine tune everything with the level of control that you would have in a lab.

And there are a bunch of I think-- a number of papers, I think recently, some by various versions of this co-author team and their collaborators, but also by others. Like for example, we had a job market candidate from here a couple of years ago Josh Dean who's now a Professor at Chicago, who did a study of the impact of noise, for example, on people's productivity. And that was a similar setting where he brought people in and taught them a task.

They had to sew pockets on shirts, I think, for example. And he was able to vary how noisy or quiet the room was and look at their productivity. So it's a style of research that I think that people are increasingly doing. And I wanted to make sure you're aware of that.

So let me just tell you more about what they do. And then you can think about what the pros and the cons of this are. So the empirical test of what they're going to do is they're going to vary the timing of when your wages are paid holding the NPV of your earnings fixed. So they're going to just be timing how your productivity responds to a liquidity infusion, without changing your overall earnings.

So here's what I mean. So here's what they do. So they have two different groups that come in. They have a control group and a treatment group.

They have people come in. They have them make these plates for some period. Then they have an announcement of when the payment schedule is going to be.

And in the two different treatments, what they just vary-- so this is, I guess, a two-week kind of treatment-- they vary whether or not they get some fraction of the payment here on day eight, or they have to wait for all of it on day 12. And the interest is going to be how this affects their working behavior in this intermediate period. And so the theory is that people who are really worried about money are going to be relieved of some of their concerns.

The ones in this group are going to be relieved about some of their immediate concerns about how do we handle our liquidity issues, right here. And if that was like-- if those kind of concerns were weighing on their mind, that that might lead to an increase in productivity. So that's the idea. Is that clear?

OK. And they're going to change this. They're going to compare this. One thing that's also nice, they're going to compare this effect to a change in the piece rate.

So they're going to pay you per plate made or whatever. They'll also vary the piece rate so they can benchmark how big is this change in timing effect to something we more normally know how to think about, which is just how people respond to changes in the wage rate. And that's also, I think, a nice feature.

There's a lot of papers that have this view of we're testing some thing, and we don't quite know how to put this parameter in a model. And so what we'll do is we'll also, in the same experiment, take something which we really do know how to interpret. And then we can at least say, well, this thing is three times as large, or a third as large, or whatever, as the effect of a change in the wage rate. So we can use this kind of thing we know how to interpret the benchmark of is this effect big or small.

So there are other papers that have done this, too. There's a nice paper, for example, that I remember from a while ago on credit, on looking at how-- this was a paper that looked at credit, I think in South Africa. And they sent out different fliers with different kinds of images on it, like a marketing campaign.

Like what's the what's the impact of having someone with an image of a same race as you, or someone who is smiling, or no image, or some things like that. And they get some effects of credit take up. And we'd like to know, are these effects large or small?

And so the way they benchmark that is they also, in the same experiment, vary the interest rate on the loan. And they can say, well, then that allows them to say, well, the effect of, say, seeing a picture of someone who's the same race as you is whatever it is. I don't remember the exact number.

Say it's half as big as the effect of the-- or the effect equivalent to a 2 percentage point change in the loan rate. I'm making up the numbers. I don't remember the exact findings of that study off the top of my head.

But the point is that by also including that additional like number we know how to think about, it lets you know whether these additional effects you're thinking about, are large or small. Yeah.

STUDENT: When would you not want that [INAUDIBLE] benchmarks?

BEN OLKEN: So I think some things are-- if the thing you're studying is inherently interpretable, I don't think you need it as much. For example, think about the paper I was talking about, about what is the effect of paying people-- a performance pay, for example in the tax collector case. There is kind of-- we don't need anything else to do because that is kind of the benchmark.

So lots of the things that we feel like we're studying-- changes in interest rates, changes in wages-- some of those things that are more natural economic parameters, don't need kind of an additional benchmarking, I think, in the same way. But it's more for these cases where the thing you're studying is not obvious. Like if I gave you some number, you have no idea if it's big or small unless we knew how to compare it to something, and we know more how to think about it.

STUDENT: I would just be consistent on the [INAUDIBLE].

BEN OLKEN: It's not so much an artificial setting. If we did this in the real world, we still would have no-- like suppose I did this, and I told you that paying you the liquidity effect in advance-- suppose we did this in a real factory with a million, 1,000 people, or whatever, and so it wasn't this artificial setting. We still find that had an effect of 4 percentage point, 4% on their productivity.

What do you do with 4%? Is that a big number or a small number? You kind of have no idea. So in some sense, what the point of this additional benchmarking is to say is it lets us think about is that number big or small relative to other [INAUDIBLE] we know how to think about. Does that make sense?

So it's not so much this artificial setting. It's more just like-- or think of the noise example I was talking about before. We do a study where we basically say, we're going to have people sew pockets on shirts, and we're going to do it in a really noisy room or a really small room.

And suppose we found that they sew 15% more pockets when the room is quiet. What do you do with that number? You can reject it's 0, so that's good.

But quantitatively, how do we think about is that effect large or small? And I think that having an additional benchmarking thing like that can help you and say, well, that's equivalent to-- how much is that worth in dollar terms? Well, it's worth-- you'd have to pay them.

Suppose you had to pay them 40% more to get the same amount of productivity. That's a number that we can think about. You see what I'm saying?

Or you can also say, for example, another thing you could do is you could say, well, what is the cost of noise, for example, to the firm? And how does that compare to the benefit, other ways you could do this to get the same productivity for wages, for example? Sorry, someone else had a question.

STUDENT: I think [INAUDIBLE].

[INTERPOSING VOICES]

BEN OLKEN: What?

STUDENT: [INAUDIBLE].

BEN OLKEN: This one?

STUDENT: Yes.

BEN OLKEN: OK, is it--

STUDENT: [INAUDIBLE] the time--

BEN OLKEN: OK, great, then I'm not going to go through it in as much detail. OK, great. So then why don't I just skip it, then? Well, let me say a few things about it. Then in that case, if Frank actually taught it in detail, let me not go through the results. Thank you for pointing that out before I spend too much time on it.

Let me just note a couple other things that I think are nice about their design. So in addition to this piece rate thing, they also show-- they do two things. The first is this announcement thing allows you to rule out this idea of gift exchange. So just the fact that you know this-- actually, it's the actual payment that makes a difference not knowing you're going to be paid. So I think that was a nice design.

And the other thing which is cool is-- one of the big concerns about this that I would have is maybe this is directly kind of affecting your productivity through the nutrition channel. So they actually measure people's nutritional intake, for example. They measure their breakfast intake, for example, as a way of saying, is there a direct effect on nutrition?

And so I think it's one thing that's very nice about this is because they control so many different levers here, they can think through what are all the possible alternatives and design things to take them into account. But if he covered this in detail, I have a lot to cover today. So why don't I, unless people have other questions, I'll just skip the rest of it and move on. OK.

Now, I'm, like, did he cover this paper, too? OK, good. All right. I was, like, uh-oh.

All right, so number one thing that affects labor supply is just in general your ability to smooth. That makes you more or less elastic. The paper by Frank and co-author suggests that your poverty levels could directly affect your productivity.

This paper by Suanna Oh looks at whether or not people have strong preferences over the kinds of jobs they do. And she does this in India. So that's a setting where I think, given the caste structure, it's going to be particularly salient.

But she wants to look at how much workers are willing to give up to avoid tasks associated with other castes. And does this matter if it's public or private? And so I'll just say, I think this is something where obviously, India is a-- given the very strong caste structure in India and the association of castes with particular kinds of jobs, this is probably, maybe, an upper bound for how big these effects are going to be.

It's hard to know of other, think of other settings where this would be even more natural. But the fact that she finds this I think suggests that these ideas of what is your identity, and how much are you willing to pay to avoid tasks that are not associated with your identity, suggest this can actually be pretty important.

So what I also think-- this is, again, another one of these similar settings where, like the previous paper, they're going to be running the task. And so that's going to allow her to control things in a fair amount of detail. So in this case, they're making paper bags for a fixed daily wage.

And she asked-- and in her case, she's going to add an additional task which you also have to do. And the task is associated with your higher or lower castes. She also says she's going to vary both the task you have to do and the amount of time you have to spend on this additional task.

So why do you think she-- by the way, she has this additional thing of the amount of time. Why might she want to do that instead of just varying the amount of task-- whether you have to do the task. Any ideas?

STUDENT: [INAUDIBLE] function?

BEN OLKEN: Yeah, it should allow you to estimate the cost function. And in particular, I think the idea is that these are identity violations. Then this might be kind of discrete in having to do the task and not so much linear in the amount of time.

So I think this helps-- if it's really unpleasant, it might be kind of linear, but if there's something about I really don't want to have to whatever the task is-- work with leather, or clean toilets, or whatever the task is-- maybe it may be discrete in a jump.

The other sort of vary whether or not the tasks are done made in public or done in private. And that's also because you might think that your identity could be different in terms of whether it's internal, like I don't want to do this, or it's external, like others are going to see me do this task. And so she's also going to vary that.

She's also going to measure willingness to accept the job using a BDM mechanism. I forget if that's been covered in this class or not. So what is the BDM mechanism?

This is a very common mechanism for eliciting people's willingness to pay, or in this case, willingness to accept. And the basic idea is this-- one thing I could do is I could-- I want to basically measure, say, a demand curve or supply curve, in this case supply curve, but let's think of a demand curve.

So I have some good. I want to measure your willingness to pay for whatever, a doodad, a clicker, for example. So one thing I could do is I could just ask you how much you're willing to pay for the clicker. That's not so good because it may not be incentivized. We don't quite know what people are going to do.

A better thing I could do would be to randomize price offers to people, and randomize, and go around the room, and say, Vachon, I'm going to offer you the clicker for \$5, take it or leave it. Yes or no? And then I'm going to go and say, Kadesh, I'm going to offer you for \$5, and Shawna, I'm going to offer you for \$3, and so on, and so forth.

And I'll randomize the prices across people, and I'll get what is the fraction of people who are willing to pay \$5, and the fraction of people who are willing to buy it for \$4, and so on. And that's a demand curve. That's perfectly fine.

There are two challenges with that. The first is it takes a lot of people because you're only getting one data point, which is the willingness to pay at a particular price for a particular person. So I have to go across everybody in order to measure that.

The second problem is if I want to do regressions or whatever, I don't know each individual's complete willingness to pay schedule. I only one datum. Maybe I'm really interested in, for Vachon, for example, I happen to give him a \$20 price. And of course he's not going to pay \$20 for this thing. So I don't really learn. I mean, I do learn a piece of information about the demand curve, but if I want to run a regression with each individual's demand in it, I'm a little short.

So the Becker-DeGroot-Marschak mechanism basically works like this-- it basically says, I want to in advance, like if I offered you 10, would you buy it? If I offered you 9, would you buy it? If I offered you 8, would you buy it? And so on and so forth.

I'll get your complete price schedule. And then I'm going to randomly pick one of those prices and implement that. And then we'll transact if you had said you were going to do it.

And that's incentive compatible because the price I select is not-- as long as the price is random, the price I'm selecting is not a function of your demand, so you may as well tell me the truth for each price level. And it's incentivized because there's some probability that each price level is going to come about, and therefore, you may as well-- you have incentive to reveal the truth. Is that clear?

So basically, the key point is you just elicit everyone's demand, each individual's demand at all the different price levels. And then you randomly pick one of them and implement that. It's not that hard, but that's what it is.

And there's a paper, actually, by a number of our former graduate students from a bunch of years ago showing that-- I think they were selling like some kind of water filtration pot in, I think Ghana. And they basically randomized whether they were going to get people's willingness to pay using this Becker-DeGroot-Marschak mechanism or just making a series of take it or leave it offers to different people. And they show the demand curves look very similar.

So I think it's a little confusing. It can be a little confusing of a subject sometimes, so you don't always do it. But that's what that is. That's that.

So what she's going to do is she's going to measure people's willingness to-- so if it's demand, it's willingness to pay. If it's supply, it's willingness to accept the price offer. So she's going to measure people's willingness to accept different price offers for these different jobs. And then one of them will be randomly implemented. Is that clear? OK.

The other thing that she does which is-- so she has a bunch of different castes they have associated with different tasks. And she also has these control tasks, which she tries to come up with similar kinds of tasks that are similar in terms of what you actually have to do, but may not have these strong caste connotations. So like washing clothes, I guess, associated with a particular caste.

So this is not my area of expertise, but especially with particular caste, washing farming tools-- basically, it's a similar kind of thing. You have to go wash something, but it doesn't have this strong caste connotation. And she has a couple of other examples like that.

And in some sense, the key point is the take-up rate. So first of all, this is the take-up rate of the different tasks that are offered. And this is the number of minutes.

So first of all, you can the number of minutes slope is pretty flat. So it really looks like it's about what task you're offered, not so much how long you have to do it. So that was that identity point I was making before. It really looks like it's something about the task, not about the amount of time. And there's still downward slope, but not very much.

For the control tasks, the higher-ranked tasks, in general, [INAUDIBLE] highest, and the middle and the lower ones, the ones that have these strong identity connotations, people are very strongly willing to take the task that is more associated with their caste, and very unlikely to take a lower rank caste. And they're even less willing to accept a task that's considered associated with a higher-ranked caste, even if it's not yours.

So I just want to mention that it seems like people are willing to-- this identity of what kinds of jobs are associated with your identity seems to be important in people's labor supply decisions. Yeah, Aaron.

STUDENT: This is a good question. So you mentioned that she randomly varied whether the tasks that people were assigned was made public, but were the tasks themselves publicly visible? Because I think in the pictures, it seemed that some of them were being done [INAUDIBLE].

BEN OLKEN: I don't remember actually. That's a good question. I don't remember. She actually doesn't find much in the way of the public treatment doesn't make a big difference.

But I don't remember. I know it was announced it was going to be public what you did. But I don't remember what the tasks [INAUDIBLE] public. Yeah, Hazel.

STUDENT: Why do we expect the left-hand graph to also be flat? I get for the right-hand graph, we expect it to be flat because it's the identity tasks. But the left one, aren't they supposed to not be identity tasks? So we wouldn't necessarily expect to see that.

BEN OLKEN: Yeah, that's a good point. That's a fair point, actually. I agree with you, actually.

Now that I think about it, I don't have a good answer for that. Sorry, but you're right. You would think that if the non-identity ones, by the argument I was making before, it also would be more downward sloping. So I take it back. I don't have a good answer for that. Yeah.

STUDENT: But I really think aggregate applications-- I just think it sounds like a really bad form of misallocation of labor. Because most people are actually--

BEN OLKEN: Yes and no. So the first, if you think that people's skills at these different-- if you think these tasks are more or less interchangeable in terms of skills, then no. If there's really strong heterogeneity in skills across tasks, then people are really good at task one and not really good a task two, then yes. So I think it really depends on how much there is substitutability in underlying production function across the tasks. But it certainly could lead to large misallocation, but doesn't necessarily lead to it.

The final thing I wanted to mention about labor supply is this new paper by Hussam et al., which is tackling the broader question of what is the psychological benefits? Are there psychological benefits of employment? So the typical model that we write down looks like this.

It has some utility over consumption and labor in this, where labor enters negatively in the utility function. We'd prefer to spend more time at leisure, but we don't. But we have to work and therefore, we [INAUDIBLE] consumption, so it's a labor [INAUDIBLE] trade-off.

And this paper is trying to ask, is that the right way to think about it? And in fact, there is some stepping way, way back, there is some reason to think that actually-- there's other reasons I think that maybe this is not quite right. So if you look at people's happiness surveys, one of the strongest predictors of unhappiness is unemployment, for example.

And if you were to control for income or consumption, that's actually a little hard to think about from this model. You would have the view that actually, if you're consuming a lot and you have all this leisure time, what's wrong with that? But it doesn't seem to be the way people are behaving. And there may be this idea that actually, there are utility benefits from working. So she wants to investigate this.

So what she's going to do is she's going to work in refugee camps. So that's an unusual setting. And you can think about whether or not that setting is relevant or not for the conclusions.

And she's going to basically randomize people into three things. So they're going to either get a job, and the job is basically going around the refugee camps doing surveys, doing survey work, for three days per week for two months-- a control group, which basically just gets a small fee to fill out her surveys, or their surveys, I should say, and a cash treatment, which is basically a large fee to fill out the surveys, where the fee from the survey is equal to the payment from the job arm. So is the design clear? Thoughts on the design? Does this get at her question, not get at her question?

STUDENT: Yeah, just to clarify, the idea for the control in cash is that the amount of time that it takes you to fill out the survey is almost entirely negligible? It's not--

BEN OLKEN: Sorry, what do you mean?

STUDENT: So the filling out of the survey in the control and cash groups is meant to be like not labor essentially?

BEN OLKEN: I'm sorry, I don't understand the question.

STUDENT: So the framework that we have in mind is that spending your time on labor as opposed to leisure is something that might be good, might be bad. And the control and the cash arms here, filling out the survey is a short enough amount of time that we're not counting it as labor?

BEN OLKEN: Yes, exactly right. Right. Exactly. So it's not work. Right. So why the cash treatment?

STUDENT: Because one reason you might get utility for that person is because you [INAUDIBLE].

BEN OLKEN: Exactly right. So the cash payment is super important. But we also want to identify the effects of the cash per se. So this is going to be the same task.

So what do you have to do? Fill the survey, but we're going to just vary the vary the income here. So these three things, they all have filling out surveys. So all of them, in addition to doing the surveys, you also have to fill out the survey for her.

So she gets the information from everybody. That's the same everywhere. And here, you get just the cash, here, the cash, but you have to work for it. Aaron.

STUDENT: How are they measuring-- what's the outcome?

BEN OLKEN: I'll show you a bunch of outcomes. Yeah.

STUDENT: These people from [INAUDIBLE]?

BEN OLKEN: Yeah, so that's a good question. I don't remember how big the camp is relative to the size of her experiment. But yes, one thing you could be concerned about is what is the effect of-- if it was large enough that other people could see what I was doing, that is something you could be concerned about. Sorry, someone else had a comment, question? Yeah.

STUDENT: Is there a purpose for the surveys? Are they told the surveys are going to be used for something?

BEN OLKEN: Yeah, I don't remember exactly what they are, but yes, they're told they have some use. They're going to be surveys of people's status of what their work, whatever it is. Yeah.

STUDENT: I'm going to assume that, from the name of the paper, that in the end, they will find if they are given work, they are better off on some psychological [INAUDIBLE]. Are the refugees aware of this effect ex ante? If they were asked to choose between these three options, which one would--

BEN OLKEN: Oh, that's a good question. I don't remember. That's a great question. I don't remember if she asked them ex ante, if they asked there. And you look you were about to say that I've forgotten something. I don't remember her asking that question, but that's really interesting to know if they're aware of. I don't know the answer to that question.

STUDENT: It's maybe kind of related to [INAUDIBLE] point, given that this setting is pretty unique, they're in refugee camps, just thinking that cash may not have the same mapping into consumption that might [INAUDIBLE] people where--

BEN OLKEN: I don't know. I mean, she can measure that. So she's actually going to look at-- yeah, she'll look at some of the consumption effects, actually. And so she'll see. She'll be able to see if they're doing things differently. So we'll get to that in a sec.

But I think you guys are right. I think that you're right that this setting is potentially important. So why is she doing it in this setting?

I think there's two reasons. One is actually, this is separate from being a paper about employment. This is also a paper about understanding refugee camps. And I think that there's a view-- so it's of independent interest, how do we think about what we should do with policy in refugee camps.

I think that the general view here that they're arguing against, in some sense, is we just need to provide people with a basic income and not worry about what they're doing with their time until we can get them to go somewhere else. And actually, she's saying, no, actually, there may be important values of what they're doing. That may actually have value in and of itself. So I think there's substantive interest.

The second is it may be a setting where they can do this sort of experiment. And if you see the way that the paper presented, I think it very much embraces the view that actually understanding how to design refugee camps is, in and of itself, an important question of interest.

On the other hand, though, it may not necessarily externally generalize in exactly the same way. And that's something to keep in mind. Sorry, are there other questions?

Oh, one other thing that you guys didn't mention, which I happen to think may be important, is it's also important to understand what the job is. So the idea is it's a job, but there are good jobs and bad jobs. If we just look at the previous paper, there are jobs that are pleasant and jobs that are unpleasant.

There are jobs that make you feel good about what you're doing or bad about what you're doing. She could easily have imagined a job that was much less pleasant that may have had very different implications. That's number one. So the results are kind of conditional on the job she happened to have. So I think that understanding that is an important detail.

And the second point about this is, one thing I think is a little less than ideal about a survey is what you actually do in a survey is you walk around and see everyone else's conditions. And so you're actually explicitly being asked, in some sense, to compare your own condition to that of other people. And so I think that one-- if it was me, I would have tried to find it.

So it's so hard to know. I'm sure they had a million constraints in designing the study. But if possible, it would have been nicer, I think, to have a job that didn't have this direct kind of social comparison aspect to it.

Because maybe people are just happier because they're looking around and saying, well, gee, my life is terrible, but boy, your life is even worse, so actually, I'm kind of better off by comparison. So that's, I think, a little bit of a disadvantage of that. But the general point is, it's important to just think through what exactly is the treatment. Yeah, Hazel.

STUDENT: [INAUDIBLE] might think some of their happiness would come just from being chosen, not from doing jobs. So you might want to survey that I'm being chosen. Even though it's randomly assigned, people might feel good about having been given this job.

BEN OLKEN: Yeah, that's a good point. Yeah, totally. That's right. You could think of your identity as being affected just by the fact that you were chosen. And people don't fully understand random assignment. Even if you told them it was random, they might not fully understand that. I agree with that. Yeah.

STUDENT: One thing that I hadn't thought of before, but also in a refugee camp, a substantial number of these people are already depressed.

BEN OLKEN: Yeah. Do we have the depression? I don't think we have the depression number. I don't think we have it. I don't see-- the PHQ is, I think, the depression screen. I don't see the control mean error, so I don't know the answer to that, but yes, probably.

STUDENT: You left your home due to a war. I would assume that's not a nice place to be in.

BEN OLKEN: Certainly not. That is absolutely right. What the relationship between that and actual depression is is an empirical question I don't know the answer to. But yes, certainly it seems plausible.

STUDENT: In that kind of a setting, potentially anything that takes your mind off the memories of war, in this case, a job that keeps you busy, may actually be good for you regardless of-- not necessarily value of the job per se, but doing anything. I would give them games to play, and that would make them, perhaps, better off psychologically, just from the [INAUDIBLE] channel being you are not thinking about the war if you're doing something else.

BEN OLKEN: Yeah. I agree with you. So another thing, again, you face a limited set of treatments, treatment choices. But I agree with you. That suggests that if she had more, or they had more, power, it would have been nice to add another treatment, which is like cash plus some kind of entertainment.

And by the way, the entertainment could be-- but of course, you have to make choices when you're designing an experiment. So then, you could have the question of should the entertainment be social or non-social? I could give you video games, or I could give you come together and play board games.

What exactly is whatever the activity is? What is it exactly kind of meaningful? So I think you're totally right, that that, I think, is a confound that I don't think we know what it is.

And so I think that that's absolutely right. I don't think if I had to choose just three treatments, this is not a crazy set of things to choose. But I agree with you that that could certainly be a channel.

And by the way, if you ever get to the point where you're designing your own experiments, you will quickly come to realize that there are way more treatments that you would like to run than you can. And part of the challenge of experimental design is picking what are the couple of things that I think are the most important, that get at this. Ed is nodding, probably having tried to do this himself, I'm guessing.

And so I think that you quickly end up in a world where I have-- I mean, I certainly remember experiments I was designing, actually doing a brainstorming, coming up with 20 different things I could possibly try. And then you have to narrow down to what is the ones that are both capturing the hypotheses that are most important, and if you have additional ones, ruling out the most important counterfactuals. And in her case, I think the most important one was the caste.

So I actually think this is not crazy. It's a very nice experimental design. But I think that other people may have made different trade-offs. And if she had more power or if they had more power, those could be additional things to think about. Yeah.

STUDENT: [INAUDIBLE] think the, I guess, traditional way of thinking about it, though, is oh, if you have leisure and you want to enter-- I don't know, maybe it's different when you're in a refugee camp, but you can fill your time with leisure. But maybe it's people don't actually know how to structure their leisure time in a way that brings fulfillment, but jobs do bring fulfillment.

And that's kind of the things she is testing. I guess what I'm saying is I don't know, though. I feel like that's kind of baked into the things she's trying to project already.

BEN OLKEN: Yeah, although I think that what Amit is saying is there's a distinction between I don't know how to fill my time and I'm explicitly conditioning my income on doing a particular task. A job has two things-- it has something I have to do and it has this conditionality of I am doing this work and getting the money for it as opposed to just getting the money for free. And so you know what I'm saying?

STUDENT: Yeah, I don't know. I guess I just-- no, maybe I don't. I don't know. I understand perhaps you're saying, or Amit is saying, but the particular thing is they don't have anything to do in the refugee camp. But I think that the idea that the marginal use [INAUDIBLE] or like there's utility to leisure and disutility to labor is that you can-- is that you can fill your time with things like entertainment. And then if you also have the same amount of income, then that would be the best.

BEN OLKEN: But what Amit is saying is she's not teasing it out. You're saying that because-- I'm actually a little confused here. You're basically saying in the refugee camp, the problem is that we can't fill our time, so it's an entertainment. That was something Thomas said.

STUDENT: Yeah, that's what I agree. That's not point. So I guess it's like-- but I think that-- never mind.

BEN OLKEN: No, I mean, I guess I think these are subtle distinctions. And I guess another way of saying it is a job is kind of a bundle of things. It's something to do. It is a particular thing to do, which is going around and taking surveys of other people.

So it fills your time. It is a particular task. That tasks may have implications. And is conditioning your-- it also means that you have to work. It's conditioning your income on a particular set of activities.

It's at least those three things, probably other things, too. And we're getting kind of the net effect of that bundle. And given the effect she finds, it would be nice to decompose that bundle even further.

STUDENT: Right. I agree that the treatment Amit is proposing would provide additional insight into what it is about the job that provides it. But I guess what I'm saying is, in terms of the neoclassical theorists would still say that--

BEN OLKEN: A job is negative.

STUDENT: Yes.

BEN OLKEN: Yes, yes, yes, I agree with that.

STUDENT: In context like this--

BEN OLKEN: Sorry, no-- well, job is negative, but the problem is the utility function could have three things. It could have consumption of material goods, chit-chatting with people, or organizing, like what am I doing during my day. And that is positive.

And work that I'd rather not do and there's negative, and those things are conflated. I think that's the point, right? No, you look unhappy with that.

STUDENT: I think I just didn't understand what you said.

BEN OLKEN: I'm saying you could write a utility function, which basically has three terms. It has U of C, which is stuff you eat, stuff you consume. Let's call it S, which is social activity, and L, which is work. And in general, this might be plus and this might be plus, and that might be negative. And the job has some of this and some of this.

STUDENT: Right. I guess what I'm saying is that the traditional way to think about it would be like, if you get something positive from social activities, you're going to go figure out how to do that. [INAUDIBLE]

BEN OLKEN: I see, yes.

STUDENT: And so if you're not figuring out how to do that, that's interesting-- the fact that you're not able to do things that make you happy with your leisure time, without labor [INAUDIBLE] compromises.

BEN OLKEN: Yes, fine, fair enough. The fact that those things are kind of coming bundled is already a relevant point of my job. Yes, I agree. OK, other comments?

One other thing that I'm going to mention is they pre-specify heterogeneity in a couple of respects, like looking at past exposure to violence based on sociability and baseline depression. And there's a broad debate on how much you should pre-specify on these things, but I'm not going to go into a lot of detail here.

But one thing I just want to note is that whenever you're planning on cutting your results by some x variable or having an interaction, that's a case where pre-specifying that interaction is really helpful. And the reason for that is if you run a treatment with three different things, the main effect-- there's only really so many ways you can run that regression. And one of the really nice things, having worked over my time with both randomized data and non-randomized data, one of the really nice advantages of working through randomized data is actually, all the empirical specifications don't really matter very much.

Because the epsilons really are random, you can run this model, you can run that model, you can use this standard error, that standard error. You can include fixed, non-fixed effects, whatever. It's going to-- maybe it'll affect your standard errors a little bit, but the basic answer is usually going to be the same.

So there's not so many ways to run a regression of, I'm interested in depression. How do I run that on this? I mean, there are differences but they're relatively small compared to if I want to look at heterogeneous effects of my treatment. Now, there's a bajillion different things I could look at heterogeneity based on.

I could look at heterogeneity based on gender, or I could look at heterogeneity based on race, or a pre-period income, or you can go on and on-- where you're from, whatever. You can come up with a bajillion different variables. And so as a way of constraining yourself, I think people have realized that that ex post, looking at the heterogeneous effects of experiments, there are so many dimensions there that it's really helpful to constrain yourself ex-ante to specify the few ones in advance. And you can do that either by registering your study on the AEA RCT Science Registry.

Another way to do it is actually, people like to just stratify on the things that they're going to do ex ante heterogeneity on, ex post heterogeneity on for two reasons. Number one, if you're actually interested in doing heterogeneity cuts on something, if you stratify on it, you make sure that you have your sample kind of equally spread across the thing you're going to cut on. And number two, the fact that you built it into your design is the most credible way of signaling that was something that you actually cared about ex-ante. So I just wanted to mention that point.

So what do they find? So basically, they look at a number of different measures of psychosocial well-being. PHQ is a depression screen. They measure stress.

They have some questions about life satisfaction, self-worth, et cetera, et cetera, et cetera. They put them together into an-- I'm not going to go through them in detail-- they put them together into a standard average standardized index. And what you can see is that in general, there's a big difference between the work treatment and the cash treatment on virtually all of these measures.

And they allocate these. In constructing the index, they point everything in the right direction so that up is always good. So less depression is good. So this one times minus 1, this one times minus 1, et cetera, et cetera. So in general, it looks like there's a pretty big distinction between these two different things.

Actually, they look at some evidence that people have fewer days sick. I don't remember the cognitive score that they're using here. But they seem to do better on that.

And they also look at your consumption choices. And they don't seem to see substantial differences in your consumption decisions between the cash treatment and the job treatment. So the key thing here is this test of whether the work is equal to the cash on a bunch of different measures. They have, whatever, luxury consumption, necessary consumption, total, savings, borrowing, and lending.

So in general, people are responding to the cash. They're saving. More they're borrowing less. They're even lending to their friends or peers or whatever.

So it's not like the cash or the job had no financial impact. It's there. But you're not seeing any difference in the work versus the cash. So it doesn't look like this is really about consumption. It looks like there's something else about the-- as you would expect, probably-- but it looks like there's something about the task itself which seems to be different. Yeah.

STUDENT: [INAUDIBLE].

BEN OLKEN: Sorry, your question is, is there a problem with selling the paper [INAUDIBLE] being?

STUDENT: Yeah, is that something [INAUDIBLE]

BEN OLKEN: I think it depends on the question. But I think in this-- I mean, I think it would be helpful. So one thing that's nice is they have a whole bunch of different measures that all kind of point in the same direction I think if it was just one measure, people might-- if you had one measure and you pre-specify this is my one measure, that would be fine.

But the fact that they have a constellation of results suggest it's not some weird thing about the way they're measuring it. It looks pretty convincing. It's about no matter how you measure it, this thing is going up. But is there a problem putting subjective well-being on the left-hand side? No, I don't think so, I think it's fine.

STUDENT: I feel like given the conversation we just had, isn't the entire point in this paper that there's some S that's not C, so you would [INAUDIBLE] need to introduce any outcome that's not--

BEN OLKEN: No, I think the point is-- well, all right, U.

STUDENT: I mean sort of--

BEN OLKEN: The point is that there's--

[INTERPOSING VOICES]

STUDENT: [INAUDIBLE] something that's not C.

BEN OLKEN: Yes, exactly. The whole point is we're trying to measure U without C. Exactly. You kind of have to in this paper, I agree. Something. But I think there's a question of you could imagine measure-- I mean, the standard way psychologists measure depression is with these depression screening questions. That's what they do.

And I should say, by the way, one thing that can actually be helpful on this is to not reinvent the wheel and to use other metrics that are commonly accepted. So for depression, for example, there are common depression questionnaires. There's the PHQ-2 and the PHQ-6 and the PHQ-10. And there's a bunch of standard-- depending on how many questions you have, there's a bunch of standard measures that psychologists have agreed on as the conventional way we measure this concept.

And so if you're going to do something that's not economically standard, one thing that is a good idea is to use these well-established ways of measuring them. So I saw you nodding. Yeah, so I think that's the one thing I would say.

And for lots and lots of these concepts, there are at least generally accepted ways that we measure these things. And I would use one of those. But I think it's perfectly fine to put subjective well-being, or depression, or whatever on the left-hand side, absolutely. Other questions? OK.

Let me note that the one thing-- I've talked a lot, a lot, a lot about labor supply. I haven't really talked much about labor demand. And I don't really know what to say about labor demand.

But I was thinking as I was putting together my slides. I noticed that we thought a lot about the labor supply and not much about labor demand, and in these rural settings. So I just wanted to note that. In the spirit that sometimes the things that we don't know are really good areas to think about and [INAUDIBLE] research questions on, I just wanted to not skip this because I didn't have anything interesting to say about it. OK, that's literally all I have to say about that.

The final topic I want to talk about in the labor section, which I may not totally finish, but I'll get through most of, is what's going on in urban labor markets in developing countries. And I think this is also an area where I think there's been a lot of increasing attention. And I want to talk about at least-- I want to mention these four themes.

So one is, how do we think about these urban factory jobs to begin with? Are those-- are they good, or are they bad? How do we think about that? I just want to mention the paper on that briefly.

One theme that I think has come up recently that I think is a really important development economics theme is the role of the large informal sector. So I think one thing that differentiates urban labor markets in, say, I don't know, wherever. Pick your favorite developing country, city, Bombay, Mumbai, sorry, compared to whatever, Boston. The informal sector is going to be much, much larger.

And that may have implications for how we think about labor market regulation, working conditions, a whole bunch of stuff. How do we think about those issues? So I want to mention a few things there.

There's some interesting new work about search, and signaling, and frictions. This is a general issue in labor markets. But how do we think about-- and so in a place where people may have less ability to signal their skills with credentials, how do we think about what's going on in those labor markets?

And then finally, one issue I want to talk about is labor conditions and what do we know about bad working conditions in these developing country settings? And what can we do about them? So that's a lot for half an hour, but let me at least try to hit on a few of these themes.

And what are the role of-- both in the work conditions domestically and also what is the role of multinationals. And I think understanding-- I actually think understanding the role of multinationals here is a super interesting question. And there's one nice paper that I'll mention on it. But I think there's more to be done here.

So one question people often have about urban labor markets is, do people even-- how do people think about different-- how do we think about these urban factory jobs? Do people want them? Do they not want them? How do they think about that?

What's the value of a job? And you often hear there's a lot of urban unemployment. Is that actually that people actually really want these jobs and can't get them, or is there something else? Or maybe they want better jobs than those. How do we think about that?

So Blattman and Dercon have an interesting paper where they're going to actually randomize people getting these industrial jobs, see what the impact of them is. So they take 1,000 applicants to entry-level jobs in five industrial firms in Ethiopia. Most of these people were unemployed, but educated young adults, mostly women.

And they're basically people who are applying for these jobs. They want the jobs. The jobs were oversubscribed, and so they're going to randomize who gets the jobs.

And so the jobs are, I think, typical kind of entry-level jobs. In this context, they have about a \$1 hourly wage. So a third of people get the job, a third of people go to an entrepreneurship program where they get a \$300 grant-- so that's equivalent to the wage you would get for working for a year, so a pretty big grant-- And a third to a control group. And they're basically going to track what happens to these people one year later and then five years later.

So that's the experiment. So what is the effect of giving people one of these jobs? So one question that I wanted to ask for you to think about is, how do you think about the selection of both workers and firms into this project? How does that help you think about the results?

Is my question clear? Yeah, Paolo.

STUDENT: It seems like the people who would choose to be in the study are people who have interest in being self-employed and an entrepreneur. And it's comparing, for that population, the alternative of being an employee.

BEN OLKEN: Well, they're applying-- yes, so they're applying to entry-level jobs. So there's nothing actually applying to be [INAUDIBLE].

STUDENT: Sorry.

BEN OLKEN: But yes, so they're selective. They want the job actually. Aaron?

STUDENT: I guess maybe this is related to what Paolo was mentioning, but the people who are applying to-- people are selecting in based on wanting to be an employee rather than being-- so I guess, maybe it's just an issue of take-up. People who are offered entrepreneurship program may not feel like they have the entrepreneurial ability. I'd rather work for a fixed wage in a company where my tasks are--

BEN OLKEN: Right, so it may not just-- so I think you're right. So it may not be just the selection, the take-up effect. It may be people take the \$300, but actually, they don't have any good ideas.

If you offered me money to go create a startup, I might take the money, but I don't have any good startup ideas. That's not my thing. I'm an employee person. And likewise, there may be a lot of-- whereas if you went over to the Sloan School and found people over there, and say, hey, I have some money to start a startup, you might have all kinds of great ideas because that's kind of what they're selected on.

So I agree with you. This may not be the best setting to test entrepreneurship. Because the people who are selected into this one-- they want a job. They didn't want self-employment. So that's one point. I agree with that. What else might be relevant to the selection of workers here? Yeah, Christine.

STUDENT: Maybe since there are entry-level jobs, it's a specific sample of people that are OK with a job like that. But we could have other kinds of unemployed people that maybe had employment before and they lost it, but they are not going to settle for a job that's going to be entry level.

BEN OLKEN: Yeah, right. So these are people who actually want this particular job. That's good.

On the other hand, you might imagine that people who-- there might be heterogeneity in people's skill set in the population. And people who are unemployed may be the lower skilled, on average may have less-- of course, there's lots of reasons people are unemployed, but they may, on average, be-- the higher skilled people may be the ones who already have jobs. So they may be a less useful skill set. How about how about the selection of firms? Wes.

STUDENT: These are firms who are willing to take their employees at random? Or to like--

BEN OLKEN: That's kind of weird.

STUDENT: The nature of the job is such that you don't really care who does it among your applicant pool, as long as somebody does it.

BEN OLKEN: Right. So it may not be the best job. Certainly at MIT, we're not going to randomly hire people among all possible applicants. We have some view of what the job is. And it may more generally be that the set of firms that are completely willing to randomize their applicant pool may not necessarily be the highest quality firms.

And so I think that ultimately would be something to keep in mind, too-- that they may be just looking to fill people in. And that may not be the kinds of firms that are going to really-- for example, if you basically thought you were going to have to invest a lot in these people, and train them over many years, and create a long career for these people, you might be thinking more about the selection process and not be willing to randomize. So I think that those are potential-- the point I wanted to make is that just because you do this, the selection here could potentially be important. Yeah, Paolo.

STUDENT: But it seems like the answers that we got to both of these questions are-- the answer to the first question means that we're biasing the long-term outcomes, very generally speaking, of the people in the entrepreneurship program downwards because they might not be very interested in entrepreneurship. The second one is biasing the outcomes of the people who work and get hired, also downwards, because the firm might not be that good. And so their long-term outcomes might be worse. And so it feels like-- how do you think that we should interpret, as readers, whatever result--

BEN OLKEN: Why don't you see the results, then let's come back to that question in a sec? So here are the results. So most people who were offered the job worked at least one day.

So there does seem to be a difference between the job and the entrepreneur treatment, although note that-- this is the one year-- was working in the study from an endline is only-- worked at least a month is only 70% of people who were offered a job. And worked at the study from the endline was only 20%. So note that. And then, of the people who were offered the entrepreneurship, most of them take it.

What they find is-- so this graph, by the way, is I feel like a terrible graph because the 0 needs to be bolded so we can see what's positive and what's negative. I find this graph really hard to read. But if we put the 0, with my hand here, you can see, not a huge amount of impacts of the job offer except it makes your physical health worse.

So working in this job seems to be bad for your health, doesn't seem to have much of impact on your mental health or basically anything else. And the entrepreneurship program is good for your mental health, good for your income, and not much else. That's after one year.

This is after five years. And after five years, essentially, you find almost nothing. Maybe you can pick out, out of 20 different coefficients, maybe you have one positive, one negative. It doesn't look like there are any substantial effects. And the physical health effects basically-- so no effects on income.

The startup also has not huge effects. The one effect is that they're less likely to work in factory laborer and they're maybe more likely to work in medium-skilled labor, but not very much. And in terms of the physical health and the mental health effects, those all go away after five years.

And so actually, in some sense, to answer your question, I kind of feel like one of the challenges of this study is that we sort of have other reasons that you might not find huge effects of either of them. And that's kind of what they find, that people get these jobs. They leave them.

The jobs are pretty unpleasant. They're bad for their health. Most of them leave. And then, things go back to normal.

And the entrepreneurship program doesn't seem particularly successful here. I think not to say that all entrepreneurship programs aren't successful, but maybe this is the wrong-- wasn't necessarily the best pool to try them. So this paper was, I think, influential because it was one of the first papers to study what is the impact of giving someone one of these factory jobs.

But I do think that the sample selection issues are important to think through in terms of how we interpret the effects. And it's not the final word on that. But I think actually, it's a very well-done study. And I think actually, following these people for five years is actually, I think, really very hard and I think very commendable in terms of actually being able to figure out what these things were.

And part of this also may be reflecting that we're in an equilibrium in the labor market, where actually, people get these jobs or can not get these jobs. They're not super duper scarce. And so randomizing you to get one may not affect your long-run outcomes because if you didn't get one, maybe you'll eventually end somewhere similar. OK, questions? Yeah.

STUDENT: I have a quick question about the logic for including the entrepreneurship treatment. So I guess one potential idea is that you want to have some sense of what the possible counterfactuals are to not getting this factory job. But it seems to me that what most people who don't get this factory job will do is just apply to a different one. So since my controller isn't-- I can't force you to not work.

BEN OLKEN: Well, it turns out that's not true, actually. So sorry, I take it back. It is actually true. So you're right.

So if you look at the-- well, I mean, that's kind of what this first stage is about. So did you work in the formal sector for at least a month? You're right, it's 69% in the control group. So it's high. It

Does go up to 90%. So the first stage is 30 percentage points. Were you working in any-- worked at least a month in any industrial firm, again, goes up by double. So it's high in the control group, but there is still a first stage. Other questions?

The second thing I wanted to talk about is the role of the informal sector and labor regulation more generally. So there's a paper of Besley and Burgess that looks at overall labor regulation in India using a state by year difference-in-difference. And the finding of this paper is more "pro-worker policies, actually lower output and lower formal employment, and may even increase poverty."

And the trade-off they're trying to highlight is that as you make-- in a case where there is-- firms can choose to locate in different places. There may be a trade-off between getting more protections for the existing set of workers, on the one hand, but discouraging firms from locating there, and firm growth happening other places, as well. That's going to depend on both whether these policies have direct costs on any firm, and in particular if there are firm location decisions and firms are more elastic, then those effects could be larger.

I think this paper was an important earlier paper. It's a little coarse in terms of, if you actually look at it, what it does. They basically kind of code up policies like 1 for it's pro worker or minus 1 if it's anti worker, and it's kind of a state-level diff-in-diff. It doesn't necessarily shed a lot of detail onto what's happening, but I think it's an important at least hypothesis to think about.

What are firms doing given these regulations? So we have a paper which looks, among other things, at the idea that many firm regulations kick in at particular thresholds. So in India, for example, if your firm has 100 employees, all kinds of additional regulations kick in.

So we ask whether you see firms avoiding these regulations. And in particular, we look at the density of firms and look at whether they're bunching at firms kind of just below 100. If that was true, you might imagine they would grow up to 100 and stop.

And it is true. If you look at informal firms, you do see excess mass right at 98 employees or whatever. So there's some kind of distortionary activity there, but it's really small. So we estimate this additional bunching over here is 400 firms in all of India, so it's not a big effect. Yeah.

STUDENT: [INAUDIBLE] firms?

BEN OLKEN: From the-- I think it's from the NSS. The National Sample Survey has a module that does this in certain years. In general, you can observe-- so I think that's how we do it in India. In other contexts, some countries will do firm censuses, where they will actually literally go door to door and count every single firm, regardless of whether or not it's formal or not.

STUDENT: [INAUDIBLE]

BEN OLKEN: That was how we're doing this one.

STUDENT: They stopped asking that question in the 1990s.

BEN OLKEN: So it's not that. It's embarrassing that I don't remember exactly what survey it is. I think we did it from the NSS. There's a special module in the NSS. But some countries just count informal firms directly.

STUDENT: I still don't understand why. Informal firms will be [INAUDIBLE], I would assume they will be banned by the legal system coming at employment of under because they are not observed to be different.

BEN OLKEN: Yeah, that's also a good point. Right. You might imagine that-- so I agree with you. I would imagine this effect would be bigger at 100, but maybe they might become more formalized. They might become formalized.

The workers might sort of-- I agree with you. The point of this actually is not to show bunching. It's to show there's not much bunching is the main point.

STUDENT: It looks amazing that there are informal firms with 120 employed people. Because my understanding of the informal firms was like, they are usually small so that they cannot be detected. But if you have 100 employees, how are they not detected?

BEN OLKEN: [INAUDIBLE] It's a good question, but I think that there should-- it's a question of detection and making you formally register, and all that stuff. I agree with you, the larger you get, the more likely you are to be formal. But I think it's-- I agree with you, actually. I hadn't actually thought that question that way, but I think you're right. It's surprising, but it's certainly in the data.

STUDENT: These percentages look like all the y-axis percentage of all firms in the economy.

BEN OLKEN: Yes, and so this is of all the firms in the economy. And this is of all the formal firms and all the informal firms. This is very, very small.

What's happening is most of the firms have a small number of employees. So that's why I'm saying this is like 400 firms in all of India over here, because it's like 0.0404 times the whole thing. If you actually-- in the paper, we [INAUDIBLE] this non-zoomed out and if you don't-- if I put all the way to 0 on the x-axis, you wouldn't see anything here. It's like-- looks like that. That's also in the paper.

What's going on-- so there's a paper by Bertrand et al., which basically says that what's happening is that basically, firms are trying to get around some of these constraints through outsourcing. And so what they do is in particular-- it's also not quite precise at 100 because firms are-- this idea that we should look for bunching about 100, firms may have shocks. They may go from one to another, and they may hire or fire from year to year.

But what you can see is that this is the probability they're hiring contract workers, or having any contract workers, or having contract workers greater than 50% of their employment. What you can see is that basically, this is really increasing as you get-- the small firms aren't doing it. And it's getting closer as you get closer to this threshold.

And as you become large, firms are actually having some nontrivial share of their workers be hired. And it's kind of --were his way of potentially evading some of these-- not evading, or avoiding some of these employment regulations. And actually, we have a job market candidate on the market this year who's actually studying in Brazil, what are the implications of allowing this kind of outsourcing on workers in the Brazilian security guard industry?

So I mentioned that. The final thing I want to mention on an informal firm-- so I'm going to take maybe two more minutes and talk about this because I think this is pretty fascinating-- is are there spillovers from regulations in the formal sector to what's happening in the informal sector? And this maybe gets a little bit of your question, why would there be a spike at 100 or something? Is there anything spilling over from the formal sector to the informal sector?

And in particular, this paper by Derenoncourt-- it's not really about this, but what I actually think is the most interesting finding from this paper is that there seem to be spillovers from formal sector minimum wages to wages that are happening in the informal sector. And that's not totally crazy if we think there's a labor market out there, that maybe that could be what's driving that. But it suggests actually that you may have thought that some of these labor market regulations, like minimum wages, wouldn't have any bite in a place with a large informal sector because those firms wouldn't be affected by that. And this paper suggests that's not right.

So in particular-- the way they get this data, by the way, is they have household survey data. And they're going to look at households, look at what whether you're employed in a formal-- so they're looking at it from the household side of what your wage is and looking at what kind of firm you're employed at. And here's the key point here.

So this is your monthly wage. This is the minimum wage. The light, these dots here are the in the informal sector and these are in the formal sector. So nobody in the formal sector is earning below the minimum wage. And some people are earning below the minimum wage in the informal sector.

But what I think is kind of remarkable is there's this massive spike right at the minimum wage. And that's true in the informal sector, as well as in the formal sector. And in fact, when they look at-- this is probably too small, but it's in your handout-- as you see the-- sorry, so this is the main point I wanted to make.

What I was hoping they would have is a similar-- they actually have changes in the minimum wage over time. The version of the paper that I saw did not have the informal sector over time, showing how the informal sector wage changes when they raise the formal minimum wage. So I suggested that they do that. I think this would be really nice because I think if they could show you that the informal wage is following the formal minimum wage, I think that would be pretty remarkable and show that these formal sector regulations are carrying over to the informal sector, as well.

And more generally, understanding what are the spillovers from the formal sector to the informal sector is-- we have this assumption that in the informal sector, anything goes. But understanding and probing that in more detail, I think, is really important. Yeah. Amit. Your question?

STUDENT: From a normal perspective if workers are people searching for jobs in both informal and formal sectors, [INAUDIBLE] formal sector should have [INAUDIBLE].

BEN OLKEN: It depends. It depends on what you think of as the model. So if the minimum wage is too high-- in a minimum wage model, if the minimum wage is above the market clearing wage, then it's not necessarily clear it would have spillover effects to the informal sector because there's a shortage of jobs at-- there's queuing for jobs at the minimum wage. See what I'm saying? Everyone who would want a job with minimum wage can't get one. It depends on what your model looks like. You see what I'm saying?

If the formal sector looks like this, and we put a minimum wage up here, and we're over here. There's all these people who would like jobs over here at the minimum wage that can't get one. And so those people could maybe just instead prefer to just take a job with the informal sector at the market clearing wage.

STUDENT: So maybe that increases the informal sector's market fair wage there's enough of them.

BEN OLKEN: Yeah, it may. So you can write down a model in which it could. For example, some of these people over here may decide to queue and wait around to get one of these higher minimum wage jobs. And that may decrease the number of people who are willing to go take these other jobs. And they may have to bid up their wages in expectation.

I think that simple model, by the way, wouldn't get you the informal sector paying the exact same wage. It would increase the informal sector's wage but it wouldn't go all the way. Because your choice would be, I go to the informal sector-- the indifference condition would be I queue for the formal sector job or I take the informal sector job now. So there should still be a discount.

So you're right, there could be spillovers, but I think there should still be a discount. But nevertheless, anyway, I found this graph totally striking. And I think that understanding more generally what those spillovers between formal and informal sector looks like is a really interesting area to do more work on

So I'm totally out of time, so I'll stop now. I may say a few more things about labor at the beginning of next class. And then mostly I'm going to talk about credit next week, so do the credit reading on the syllabus.