PROFESSOR: A lot of what we have done, until today, we sort of assumed, at one place or another, that the people were unable to borrow. For example, a lot of the s-shaped problem that we have seen along the way, people would be able to escape from them if only they could borrow.

For example, all of the issues on risk that we've discussed, that people have these shocks and they lose their business. And that puts them back on the left part of the curve. This could be removed if you were able to borrow your way out of these problems.

So when you are in a bad shock, you borrow. And when you are in good state, you reimburse, and everything is good. So it seems that we needed to spend some time discussing. We can't really take it as given that people can't borrow.

First, because it's not true, actually. Poor people borrow a lot. It depends, a bit, from country to country. But in a country like India, for example, about 70% of people will have some loan from someone, usually not from a bank, but from a moneylender or a shopkeeper or their landlord or something like that.

So there are actually a lot of lending-borrowing relationships around. So it doesn't seem to be a very good assumption to start with the idea that people can't borrow. Secondly is, even if they couldn't borrow, we want to spend some time and try to understand why that's the case.

So in a sense, we could have done this many lectures ago. But finally, we are now getting the crux of this borrowing question. What the newspaper article, for today, made kind of clear is that this is one way, one reason why you should be interested in these things or you might be interested in this things.

Microcredit is being discussed a lot these days. Has anyone heard what is happening to Yunus these days? Have any of you heard like what's the situation? Sorry?

AUDIENCE: Did you say, Yunus?

PROFESSOR: Yunus, yeah. What's happening with Yunus?

AUDIENCE: I don't know the details, but he's kind of getting pushed out of the organization that he started, Grameen, the microfinance banking [INAUDIBLE].

PROFESSOR: Right, so he's being pushed out of Grameen on sort of technical reasons. I mean it's not. He is older than 70. And then the government is arguing that Grameen is a public bank, because the state owns some parts of the capital. But a very small part, because Grameen is largely held by the borrowers.

They're now trying to push him out. And at the same time, there is a discourse along the line that, ooh, maybe microcredit is not all that its cracked up to be, et cetera. This follows a big event in India, in November, where, in Andhra Pradesh, one of the hot beds of microfinance in India, the government decided that it was now illegal to-- issued and ordinance saying that it was illegal to ask people to repay in the absence of the local mayor.

So given that the local mayor are not always in the field, always present, et cetera, that turns out to be a pretty big constraint. So all the repayments stopped to microfinance agencies in Andhra Pradesh, in November. And to this day, they haven't really restarted.

And in the context of that, you have had a lot of articles in the press about maybe microcredit is actually bad, maybe microcredit is the new usury. But I don't want to go into the details of whether it's good or bad now, because you're going to do it in the next lecture.

What I want to do is to give us some tools, today. So it's going to be a little bit more theoretical lecture than usually. I want to give us some tools to try to understand

why it might be difficult for the poor to borrow, why the poor might face higher interest rates, and what microcredit has done that can partially solve this program or why it doesn't solve them fully, et cetera. That's kind of where we're heading, now.

So maybe we can start with some facts that it's good to have in mind. And then we are going to have a series of simple models that we are going to try to apply to these facts.

So the first fact is that most of the poor do not have access to any kind of formal credit, excluding microfinance, which reaches about 200 million people worldwide. So most of the poor don't borrow from a bank or from a credit union or something like that. There are some numbers that are coming from the the data set on the life of the poor, under $1 a day.

You see, on the left side, the fraction of people who have a loan. And you see that it's not nothing. Actually, the number six is wrong. It's more. 60% of people had a loan in India, Cote d'Ivoire, 31%, 12% in Indonesia, 93% in Pakistan. Yeah?

AUDIENCE: Why is there is such a big discrepancy between-- or why [INAUDIBLE] informal market in Pakistan?

PROFESSOR: So first, what you notice is that everywhere you have. The fact that a lot of the loans that people. So there are two facts in this corner-- or three facts. One is that it is not that credit access is 0 in most countries, except in Panama, where it's pretty low.

The second fact is maybe what you were talking about, that there is a lot of viability, where in a place like Pakistan or India-- once the typo is corrected-- you have an enormous amount of lending, like 93% of people have a loan.

And the third fact is that these loans are mostly not from the formal sector, with the possible exception of Indonesia, that has 25% of loans coming from the formal sector. Do you want to re-ask your question to make sure then?

AUDIENCE: Yeah, I mean, just Pakistan has such percentage of individual with loans. I mean it would be more understandable that fraction of loans coming from a bank in a

country that doesn't have that much lending would be lower, just because there isn't that much opportunity. What surprises me is how low the fraction of loans that are coming from a bank, given how many individuals have loans at all. So I was wondering if there is a reason that that's the case in Pakistan or is it an anomaly?

PROFESSOR: So in a sense, we could ask the question two ways. Why is the informal loan market so particularly active in Pakistan? Or why is the formal market so absent? And I think the first question, in a sense, is the way to ask it.

Basically, in Pakistan, there is not much more formal lending then in a place like, say, Cote d'Ivoire. But there is much more informal lending, so there is much more activity.

That varies a lot. That varies from country to country. Within countries, it also varies from place to place. And it also varies even within a village, within a region. Who has access to credit, who doesn't have access to credit also varies.

So I can't really answer the question, right now. But I'm sort of hoping that, by the end of the lecture, we'll have some elements that we can apply back to saying, why are things different in Pakistan ? Yeah?

AUDIENCE: What's the percent of people with a loan [INAUDIBLE] in developed countries?

PROFESSOR: What's the percentage of people with a loan in developed countries? I think it would be very, very, very high. Because, as soon as you have a credit card, you have a loan. So I think, as a fraction of adults, that it would be pretty close to one, I would say.

You're absolutely right. I don't know if this is what you had in mind. But this is lower than in developed countries. And what is particularly striking is the low access to any kind of formal lending.

AUDIENCE: How would it look different if it was urban instead of rural households? Because like Panama is really weird. It must be [INAUDIBLE].

PROFESSOR: Few people living [INAUDIBLE]. In the same table, we also have the urban households. They will have more loans and more informal loans. So the ratio of informal to formal in urban households is actually not that different from what it is here. You have more loans and more informal loans and more formal loans, with a ratio-- to my knowledge-- remaining more or less constant.

That's the first fact, a fair amount of loans but very few formal loans. The second fact is more like a history fact. Governments have tried, historically, to do something about it. So in the 1960s and the 1970s, many governments of developing countries, in India, in Brazil, in Colombia, in Peru, in Mexico tried to either force or subsidize the banks, either public banks or government banks, to go and lend to the poor.

So in India, for example, the way it happened is, first, the banks were nationalized, by Mrs. Gandhi, during the same period as The Emergency. They were nationalized in two waves.

And then the banks, irrespective of whether they were nationalized or not, were then told that they could not open a branch in a town if they did not open, at the same time, four branches in rural areas that were not previously served.

So as the bank tried to expand in an urban area, where they had a market, they had to expand in rural areas. And moreover, to this day, banks were given rules about how their portfolio needed to be allocated.

So you have a rule called a priority sector rule, saying that the bank must lend 40% of their portfolio to the priority sector. The priority sector is small enterprises in the rural sector. And within priority sector, they need to do at least a fraction to the rural sector.

So both of these things are forcing the banks to go into the rural areas and then forcing them to balance their portfolio this way and capping the interest rate up, capping the interest rate that they could charge. It had the result that loans were pushed to farmers and things like that.

But those loans were rather a disaster, with very, very high default rates. So a lot of people never reimbursed their loans. And eventually, they became more like a political giveaway rather than a credit program. So it became sort of expensive, inefficient way to give people money as opposed to a real credit program.

Let's give you one illustration of a political giveaway, which is a paper by Shawn Cole, which looks at what he calls lending cycle. You're missing something important, which is what is on the x-axis, over here, is the year until the next election.

So this is the year. There is an election about every five years. So this is saying this is the year just before the next election. And what you're seeing is that the year before an election, you get a huge boost in lending, suddenly. And this is for public banks.

And if we look at private banks-- there are a few left-- you don't have these political lending cycle. And another thing that he has, which is interesting, is that you get more of this boost in swing districts, in districts that are where the margin of victory in the previous election was low, then in safe districts, where it's pretty clear who was going to win the election. Yeah?

AUDIENCE: I might have missed it. So why is there more lending before an election? Is that because after the person gets elected, everyone just defaults [INAUDIBLE]?

PROFESSOR: So remember all of the facts that I just said. You get more lending just before the election. It's only public banks. And it's only in swing districts, in districts where the margin of victory in the previous election was close. So why do they lend more?

AUDIENCE: They borrow [INAUDIBLE], because the candidates will make a promise that they'll [INAUDIBLE] don't have to pay [INAUDIBLE].

PROFESSOR: Exactly. The default rate is so high that loans are pretty much gifts. So if you give more of it, than it's like vote buying kind of activities. Yeah?

AUDIENCE: Could you go back to the previous slide for a second? Why is it 0, negative 0.1,

negative 0.2?

PROFESSOR: So 0 is just a normalization. So it starts at 0. It is saying that any year that is not a year just before the election is below. Because this is to show, in relation to that year, the old one is negative. An you have the little standard errors on the side, as well. Good question. Whatever the level is, he's normalized them.

So basically, that is telling you that even if you had the effort. It's not that Grameen's didn't try. But in India-- and then it's also the case in other countries-- eventually, they stopped trying to at least use these banks as banks. They are more used as like pushing money away.

Eventually, in India, they decided to shut down the social banking program in the early 1990s. Now the banks that don't have to start in rural areas. They still have the priority sector rules, but they don't have to start in rural areas.

So that's the fast fact of two halves of a fact, very little formal lending and rather not very good performances in the effort to lend to the poor.

The second fact, so people, when they access loans, access them mostly from the informal sector. And the second fact that is important is that loans are available in the informal sector, but the interest rates are very high, very high and very variable, which is going to be our next fact.

But just to say very high, the sort of range where I think you would get most of the rates is between 40% a year to 200% a year. That's pretty high, if you compare very, very high interest rates on your credit card, in the US, is of the order of maybe 20% a year. Yeah?

AUDIENCE: So a question I had while reading the article was, yes, they're very high, percentage-wise. But if the loan amounts are so small, like, say, if I were to borrow $1 today, I have to pay $2 tomorrow. That's a huge percent increase, but it's not that big of an amount.

PROFESSOR: It's not that big of an amount but from your perspective. It's a very good point. And

we're going to go back to that, which is the fact that it's not that big of an amount is relevant for the bank, who is giving you this money.

But for you, it just means that whatever-- it's still, the interest rate is very high. So unless you have a very good use for this money, the fact that it's just $1, yet you have somehow to find a way to transform this $1 into $2 next year.

We're going to go back to your point. From the point of view of supply, it's going to matter a lot. You're going to see that. It's going to turn out to be one of the key things, which is, because people borrow a lot, these high interest rates are, in a month, a relatively small part. But from the point of view of the borrower, it means that, not only they can't borrow much, but they have to repay this huge interest rate.

It comes to the daily rate. Some people borrow on the daily market. For example, food vendors borrow on the daily market. A common rate on the daily market is 5% a day. So do you have like a guess of what 5% a day is per year? An order of magnitude?

Is it 5% multiplied by 365?

AUDIENCE: No. Because it's compounded.

PROFESSOR: No, because it compounds. So if it's on the order of the millions of percentage, it's a very, very, very, very, high interest rate, because it compounds it really fast. It's 1.05 to the power of 365. It's a huge interest rate. That's on the high range but not uncommon.

There is one study that I'm going to keep returning to, today. It's a lovely study on Pakistan, where some guy, called Aleem, went and talked to various moneylenders and collected very detailed data on their operation.

And for Pakistan, he found that the interest they charge was 79%, almost. And you could say, well, this is because their own money is expensive. But they're own cost of capital is 33%. So their own money is expensive, because they are probably borrowing from the bank or borrowing from somewhere at some high cost.

But there's still a big wedge between the cost of capital, for them, and what they charge the lender. So that's fact two. Keep in mind, high interest rate.

Fact three is these interest rates are not only high, they're very variable, even within the same village. So if you go back to the Aleem study, the mean was 79%. The standard deviation is 38%. Which means that the 95% confidence interval includes a very low number, like 2% a year, and a very high number, like 150%.

So it means you see, pretty frequently, in the same village, people borrowing at very, very different traits. So that is a certain other fact we have to have in mind. Yeah?

AUDIENCE: Was that huge range, is that a reflection, then, that lenders are really adept at calculating, precisely, someone's actual likelihood of repayment or is that favoritism?

PROFESSOR: Exactly. So we'd have to understand like how come this can be so variable? Is it likely that the likelihood of repayment can explain such a big range or do we have to think about other things? And if it's where the likelihood of repayment, can it explain that much difference?

AUDIENCE: Is this taking into account the fact that if the lender had a spell, then he gets paid more, because he needs more money?

PROFESSOR: No. That's the average rate that they charge. These are really moneylenders, like professional moneylenders. So I think what you're referring to is, sometimes, when people lend to each other, say, you know, you and I lend to each other. Because you have had a bad time, I lend you some money. And then when I get better, you lend me some money when you get better.

When you see people doing that informally, what you're seeing is that people tend to pay higher interest rate when they're doing well and lower when they're doing poorly. But also, they tend to pay higher interest rates when the people who have lent them money are doing poorly.

And they pay higher interest rate when the lender is doing poorly and lower interest rate when the lender is doing well. So the former could be just, because I don't have money, I can't reimburse. The latter is a sign that people sometimes use this informal lending between each other as a way of smoothing consumption.

So we can remove that. These are more like a way of insuring, mutually insuring, like you saw in the last few lectures. Where these are like professional moneylenders that are charging different rates.

So maybe we need to go back to your question. Is it the case that that can be explained by the ability to repay or do we need to bring in some more things, like favoritism, social relationships, what have you? So let's keep that in mind.

We now have three, very little formal lending, high interest rates, very variable interest rates. The fourth fact, one of the dimension of variation is how rich you are. So the rich have larger loans, and they pay lower rates.

So here's one fact for all of India showing that the range for the landless is between 28% and 125% interest rate, so again, this wide range with a pretty high interest rate. And the range for the people who have land is between 21% and 40%. So its both a smaller range, and it doesn't include the very high value.

So the rich tend to pay-- and is this is just one fact. But we can accumulate these facts. That's kind of a representative fact of that. Yeah?

AUDIENCE: To some degree, that variation is to be expected [INAUDIBLE] loan. So therefore, if it is a smaller loan, then, of course, the percent interest rate is going to be higher.

PROFESSOR: Right. So to what extent can this be explained by fixed costs? That's the question we'll ask in a minute. I think you're exactly right. And that goes back to [INAUDIBLE] point earlier, that fixed costs will play a role.

The issue we are going to ask is, why is it the case that, even if there is a relatively small fixed cost, that translates into such large differences in the interest rate? And we're going to see that.

But you're exactly right. That's exactly the intuition is that it has to be that there is some fixed costs of lending buried here, somewhere. So in that case, there is this intuition of fixed cost we'll explain.

We also, first, have to explain, why is it the case that the rich borrow more? After all, it's not because you're rich that you necessarily have better ideas? So to start with, should we take it as given that the rich should be able to borrow more?

In a sense, that's something that's very intuitive, because, here, too, when you want borrow to pay for you house, they're going to ask you to pay at least 5% of the value of the house. So you can see, immediately, that the loan you can get is a function of how rich you are. Or your credit is also like that. They ask you what is your income, and they give you a credit line that sort of corresponds to your income.

But if you think for a few minutes, in principle, where is that coming from. That's another thing we kind of have to understand. Does it come from the most basic model, that the loan you can get depends on how rich you are? It's not completely obvious.

And then once we have that, we need to see, well, does that help us explain that the interest rate also varies with how rich you are? And that's where the fixed costs are going to be very helpful.

The fifth fact. The fact that the rich pay lower interest rates, that's true. And that does seem to be linked to how much they borrow. The size of the loan is inversely related to the interest rate. So that's kind of the same fact as before, but it's true more generally.

For example, in Udaipur, our famous district in Rajasthan, where we did all of these studies, we also asked people whether they borrow and how much they pay. And basically, the credit for interest from a loan varied for each hectare that you have.

Actually, that's not a great fact to illustrate that. But the interest rate is also declining in how much you've borrowed. So those two are kind of related.

And the sixth fact, which we are going to need to take into account, is that those high interest rates are going to be difficult to explain, mechanically, by default. Because, in fact, people do not seem to be defaulting. Default rates are very, very low.

So to summarize, the poor can't borrow from formal lenders. The interest rates are high. The interest rates are variable. The rich borrow more. People who borrow more pay lower interest rates. And the default rates are very low.

AUDIENCE: Why would a rich person borrow from an informal lender if they could just borrow from a bank?

PROFESSOR: Rich meaning richer. It doesn't necessarily mean that they have access to the banks. So the name of the game-- yeah, Ben?

AUDIENCE: Aren't the rates at the bank higher than the ones that the [INAUDIBLE]?

PROFESSOR: So this is not in [INAUDIBLE]. This is in formal lending.

AUDIENCE: Sorry, I mean informal lending.

PROFESSOR: No, the rates at the banks are much, much lower. If you can get a bank loan, it's going to be at like, nominal, in Indian, 18% a year maximum.

And then if you could get a microcredit loan, or you got a microcredit loan, the rate would be about, in India, 24% a year, maybe, in Bangladesh, around this. It's much higher in Mexico. The range charted by the microcredit agency tends to be outside this range, closer to the bank rates.

AUDIENCE: For the fact the default rates are low, could that be that people don't borrow if they're desperate? Could that also be because they won't get a loan if they're desperate? Because they don't have enough capital, people won't trust them enough to loan to them in the first place.

PROFESSOR: So the default rates are low. And people who borrow are often people who borrow for productive investments, et cetera. I think you're exactly right, that people will try

not to lend to someone who has a very urgent need and might not be able to reimburse.

So the fact of that the default rates are low is an equilibrium outcome. It's the result of how the lender decides to lend his money and how much monitoring they are exercising, obviously.

AUDIENCE: So it would also make sense to give more loans to the rich, because it's not very profitable, the very small loans, if you're going to get a very small interest rate over it at the time. And like the money basically costs you, as a lender, to give up that remaining 10th of a loan to someone, especially [INAUDIBLE].

PROFESSOR: Right. So this is intuition coming back to the fixed cost. If the cost of money, for the moneylender, is proportional, he's also paying some interest rate to a depositor, people who are giving money to him. Or maybe he is getting money from a bigger moneylender. And so that proportional to how much he is getting.

So the cost of fund, itself, is proportional. So the cost of fund would not explain why a small loan is more expensive than a big loan. So we have to add something to that, which is something about the cost of administering the loan. Exactly.

AUDIENCE: [INAUDIBLE].

PROFESSOR: So that's exactly where we're heading. Yeah?

AUDIENCE: What about default rates for the poor when they're borrowing from informal?

PROFESSOR: This is that. This is what it is. The default rate for the poor, when they're borrowing from informal sources is very low. The default rate, from anyone, when they're borrowing from the bank, is very high. But that is because the bank is largely not a lending operation anymore.

AUDIENCE: Is the reason the interest rates are different in different countries because the fixed cost environment [INAUDIBLE].

PROFESSOR: It might well be. And I want to go back to that. So let's write down some models that

formalize a little bit the intuitions that have already come. So let's start with the simplest model.

So the name of the game is going to take these facts and write down a model. The simplest model, with the fewest assumptions possible, is going to help us make sense of the facts. So let's start with your 14.01 type of model, like a basic model. What should the model be?

Suppose that you have d% risk of default on any loan, but that's do the fact that someone's business has collapsed. It's not that they ran away with the money or whatever. It's just something happened. There business collapsed. They can't reimburse. So that's d%. That is observable by everyone.

And let's assume that the growth interest rate is big R, so that's 1 plus little r. And suppose that banking or moneylending is a competitive industry.

And so the moneylenders make no profit. We're going to return to that, whether it's a good assumption or a bad assumption. But suppose, for the moment, that lending is a competitive industry. So we are going to use a 0 profit condition.

So the expected marginal product of capital has to be 1 minus d times R, So the depositors, whatever you need to set to big R, such that you're depositor are getting 1 minus d times R.

So this d is very high. Then you need to set a higher interest rate, so that you can compensate your depositors. So that would be your basic model.

Now, let's look at what kind of facts can it explain, what kind of fact can it not explain. So we go back to the fact. Does it have anything to tell us about formal versus informal lenders?

In this model, everything is seen, observable. So, in principle, everybody should be able to lend to the poor, formal or informal. But this model doesn't tell us why the banks are not able to lend to the poor. Can it explain high interest rates? And under what conditions would it explain high interest rates?

AUDIENCE: If under the assumption that the poor default more often than the rich, then it would make sense to charge them a higher interest rate

PROFESSOR: Exactly. If the default rate was very high, you would explain the high interest rates. And if they were differently high for the poor than for the rich, you would also explain that the interest rate paid by the rich is higher than the poor.

So the problem is that you can't both explain the high interest rates and the low default rate. Given the low default rate, you should have low interest rates. Likewise, given the low and reasonably similar default rate, there is no reason for the interest rate to be very variable.

The interest rate paid by everyone should be the same. And there is no reason for the rich to be able to borrow more. You should be able to borrow what you need to borrow, as long as you're willing to reimburse. And you should also not be a lower interest rate.

So that's kind or a long winded answer to your question. Even if the cost of fund is-- maybe the poor want less money because they have smaller projects. But in that case, if the only problem is the cost of fund multiplied by some chance of default, then that really shouldn't fit the facts.

So we need to introduce something else to make sense of this fact. So I'm going to do it in two steps. First, I'm going to introduce the possibility that the borrower might want to run away with the money.

So they have invested in their little enterprise. Their enterprise succeeded. But still they managed to escape with the money. So imagine that the bank or the moneylender lends to an entrepreneur who has a business, which will lead the F of k, when k units of capital are invested.

So you invest k and you get F of k. So supposing you have a little shop, and you build some shelves, and you start your business, and you'll get F of k. So if you already have w, in order to invest k, you need to borrow k minus w, right?

And then at the end of the period, you need to reimburse k minus w, multiplied by the growth interest rate, what you've borrowed plus the interest rate on what you've borrowed. Everyone's on board with that?

So if we didn't have the chance that people run away with the money, we would be done. Now, suppose that you could spend some cost, h, and then you could run away with the money. And suppose that spending the cost, h, is not on the amount of money you've borrowed, but on the entire amount of money you've invested.

So basically, in order to run away with the money, you need to dismantle the shop and then take it, move away somewhere. So you need to try to move the capital, so that's on the entire shop you need to pay the cost. And that's some cost, h.

And then suppose that you need to pay some money to your depositors. So the cost of capital is D, low cost of capital. So if you're the moneylender, if he gets 1 in capital, he needs to repay D times 1 at the end of the day.

So let's look at the borrower choice. And the end, when he's realized his money, he has a choice between repaying. So if he repays, he will get F of k, which is what he's made with his business, minus K minus w, what he has borrowed, multiplied by the interest rate, growth interest rate.

So that's if he decides to behave. If he decides to run away, he still gets F of k minus the cost of running away. Now what is the lender going to do? At the end of the day, this is the choice that the borrower has. What's the lender going to do? Ben?

AUDIENCE: Make R times k minus w term smaller than the hk term.

PROFESSOR: Exactly. He's going to try to make it worthwhile for the borrower to reimburse. So it's going to set R times k minus w lower than hk, or at least equal. That is in order to make it worth the while for the borrower to reimburse.

So suppose we equalize that. We make R times k minus w equal to h of k. That gives us the expression that's over here, which is k over w is R times R minus h.

It looks like it's almost like a movie. Occasionally, some very, very noisy guys passing back.

At any rate, so can you discuss, interpret, a little bit, this graph, this equation? What is it telling us? What is it telling us that is possibly interesting? A lot of it's already here. Yeah?

AUDIENCE: You would assume that then interest rates would be lower, [INAUDIBLE].

PROFESSOR: They could play with R. But remember, they have the depositors on the other end. So they don't have much of a choice for R. So what are they going to try? What's the variable of adjustment for the lender?

AUDIENCE: The loan size.

PROFESSOR: It's the loan size. So what are they going to do if you're poorer?

AUDIENCE: They'll make the loan size smaller.

PROFESSOR: They'll make the loan size smaller. So R is not really a variable with which they can play much, because they have to pay the depositor on the other end. So they have to make 0 profit, otherwise they'll lose money. So what they are going to play with instead is they are going to play with the amount of money that is being lent to people.

So what this is going to deliver for you is that you can't borrow as much as you want. You're going to be able to borrow some multiplier of how much money you already have. Yeah?

AUDIENCE: Couldn't they also play with the cost of leaving, like increasing the cost.

PROFESSOR: Right, they could also play with h, exactly. So what does that tell us? For example, how could they play with the cost of leaving?

AUDIENCE: Regulations, bankruptcy law.

PROFESSOR: They could play with bankruptcy law. And if they're an informal moneylender? So if they're informal, in a village, so they don't really have the option of using the police or whatever, what could they do?

AUDIENCE: Well, if they're all part of the same village, everyone knows one another, just use the social ties.

PROFESSOR: They could use social ties. What else could they do?

AUDIENCE: They could beat the person.

PROFESSOR: Sorry?

AUDIENCE: If the person feels like there will be some physical punishment.

PROFESSOR: Yeah, they could break people's kneecaps. Or at least they could credibly threaten to make people offers that they won't be able to refuse. Lisa?

AUDIENCE: Which is probably why in some contexts, or at least some historical contexts, like the mafia and organized crime.

PROFESSOR: Exactly. This is why the mafia is very well placed to lend to you, because they can very credibly commit to go and torture your sister and your first born if you don't send back the money. Yeah.

AUDIENCE: I have a question. Before, we were talking about why the poor don't tend to default on their loans, which made the first probably not really [INAUDIBLE]. But why were there high default rates for the government loans?

PROFESSOR: We can try and interpret that in context of this model. Can the government threaten to go break your kneecaps if you don't repay? No. Well, not very effectively.

AUDIENCE: [INAUDIBLE].

PROFESSOR: Sorry?

AUDIENCE: I said in Libya they can.

PROFESSOR: In Libya they can. I don't know what's the default rate on Libyan loans, actually, now that you mention it.

AUDIENCE: I bet it's a lot higher now.

PROFESSOR: Well, yeah. But they're credibility of whether they can threaten breaking the kneecaps of people has certainly gone down, since their own kneecaps are in trouble at the moment. But that would be one thing.

And another thing, going back to Svetlana's point, is that the bank also knows people less well. So it's kind of much easier to run away with the money of the bank, when the bank officer sits a little bit farther away. Sorry?

AUDIENCE: Why don't they just keep stuff as security?

PROFESSOR: Right. So they can also. This is like a way of making things costly is you keep some amount of money yourself. You keep some amount of the money yourself. So it could, here, be that part of the cost, hk, is that part of the capital invested, in fact-- this wasn't in the model, but we could include it.

If you are going to invest that much in your company, you need to give me a bit on the side, which I'm going to keep as a collector for the loan.

So that's a pretty good model. It explains a number of things. It explains, in particular, that the rich can borrow more. We're taking the fact that the default is low. The default rate is low not because people are very nice, not because of the kind, fundamental nature of the poor, but because things that set such that they won't go, they won't default. It's an equilibrium outcome.

So the rich borrow more. The poor and the rich-- that should be green-- that the formal lender at a disadvantage. What we don't really get from this model is the facts on the interest rates.

Here, the interest rate is being pinned down by the default rate. And it has nothing to do with how much you borrow in that model. So it is neither different for the poor

or for the rich nor is it higher when you borrow less nor should it be very variable nor should it be particularly high, actually.

The only thing that this model delivers, which is already a first thing, is this rationing, that some people won't be able to go as much as they would want to. Another thing is that this also does not deliver another fact, that some people might be unable to borrow at all.

Here, everybody can borrow just some fraction of what they have. So if you have very little, you can borrow very small amounts. And if you have a lot, you can borrow a larger loan. But everybody has some access. So that model is missing something. Yeah?

AUDIENCE: In this model, if you're a poor person, isn't your w lower, so, therfore, your R would be different?

PROFESSOR: No. The w is lower, therefore, the k will be lower, but the R will be the same. Because in this model, the R is entirely pinned down by what you have to pay the depositor. So in this model, it's not going to be any default. And the only thing that is going to vary across people is the loan size.

So we need to introduce one more thing, which you already mentioned, which is the idea of a fixed fee. We need to introduce that there is a fixed fee to administer the loan. So you already have all mentioned it as something rather obvious, so maybe I need to not spend much time to explain why there would be a fixed fee.

So even a small loan requires some effort. So you need to open a line on your Excel document for this person. But more importantly, you need to go and do some due diligence. So Aleem describes how the moneylenders spend like a number of days to-- I wanted to check the X, which is it's an X.

But you need to spend like two or three days, kind of go and visit the person, figure out who they are, who their siblings are, so that you can go break their kneecaps, and what their business is, and whether they are really intending to do the business, and then some kind of regular checking of what's going on.

That's money, time, and time is money. So anything you want to do, it's going to cost you a little bit of money. So it seems kind of. [INAUDIBLE], you already made this point. So it's not very controversial.

But that's going to play a big role. We already went through the intuition. Intuitively, now you have a fixed cost that you also need to recover on the loan. So the interest rate is going to need to adjust to recover that fixed cost.

So that's the intuition. What I want to show you now is that the interest is going to more than adjust one for one. It's going to adjust many for one. So a small fixed cost is going to lead to a big explosion in interest rates. And let's see how that works.

So we're going to assume that it's the same thing. You can run away with the money, by paying some cost. So you can run away. So it says, before, you can decide by running away. You can decide to run away. That's the second equation here.

You could decide to run away at the end. So we are going to need to set how much you can borrow to make sure that you don't want to run away.

But in addition, you have to pay some fixed costs, otherwise, if I give you the money without paying the fixed cost, you can run away at cost 0. So you have to pay some fixed cost on the loan, anyway.

So now, the lender must satisfy two constraints when he picks both the interest rate and the amount he lends. Number one, he needs to still satisfy the previous constraint, which is the amount lent must not be too high to give people the temptation to run away with the money.

Number two, the amount of interest that he's collecting, when he collects, must be sufficient to cover what he needs to pay the depositor, which is D, that's the growth interest rate paid to the depositor, plus the fixed cost.

That is the new term, relative to what we had before. You OK with these two equations? So we need to manage these two things. Now we're going to combine these two equations. And when we combine these two equations, we get that hk must be equal to D times k minus w plus c.

That's going to help us pin down what's the parameter here and what's free. What's the free variable? D is a choice or is it given to the moneylender?

AUDIENCE: Given.

PROFESSOR: It's given. How about w?

AUDIENCE: It's given.

PROFESSOR: That's given. How about c?

AUDIENCE: [INAUDIBLE].

PROFESSOR: It's the fixed cost, so it can't really be fixed up. h is the other cost. That's the cost of running away. That's also given. So the only free variable here is k.

AUDIENCE: Does c not change depending on how much money the person [INAUDIBLE]?

PROFESSOR: No, that's the point. It's a fixed cost. So h is the part that is very relevant. It's the fixed cost that you need to pay, regardless, on the size of the loan. So in the lending cost, there is some cost that is fixed. That's c. It's like going and doing your two days of due diligence to know who the guy is and what is business and stuff. And h is the variable part.

So the only thing that we have that is free in this equation now is k. So we can use it to determine what k is going to be. And k is going to be D times w minus c divided by D minus h.

So what happens if dw is smaller than c? Yeah?

AUDIENCE: Then you can't borrow if it's a negative.

PROFESSOR: Yeah, then it would be negative. But if it's 0, you can't borrow anything. So now we have a result that is slightly different than the one we had before. We now have a result where some people will not be able to borrow at all. Some people will not be able to borrow at all if the amounts that they could borrow is too small to cover the interest rate.

And how does k vary with w? It's increasing. When you're richer, you get to borrow more. And with h, it's also increasing. When you have a negative, which is under-- if the cost of running away is bigger, than you also get to borrow more. That's the kneecap argument. k is divided by something with a minus is front, so that makes it negative.

So that's for the capital. And now we can go back and look at the interest rate. And so we can replace the value for k in the interest rate expression. And you get this expression, which is the interest rate that someone pays is going to be-- you can see that people will pay a higher interest rate if they borrow less.

People will pay a higher interest rate when the borrow less, simply because the fixed costs has to be spread over a smaller amount of money. And then if replace what they can borrow in this expression, we're getting the expression for the interest rate as a function of all of the exogenous stuff in the model.

So what they are paying is the cost, D, plus c times D minus h divided by hw minus c. So what you're getting is a multiplier property, which is when you increase the cost to a depositor by 1, you increase the interest rate by more than 1.

Every time you increase the interest rate paid to the depositor by 1%, you increase the interest rate by more than 1. And likewise, when you increase the the fixed cost c by 1, you increase the interest rate paid by more than 1.

And then the last thing you have is the interest rate, also, depends on your wealth and also in this multiplier way. So now small differences in the cost of funds, small differences in the cost of monitoring the loans, either the fixed costs or the variable costs, or small differences in wealth are all things that are going to lead to big

differences in interest rates.

This is what we see in the math. But can you think of an intuition behind this multiplier property? Why do we have this multiplier property? Why is it that it's just not one for one? Think of Libya.

AUDIENCE: People pay the cost on a risk [INAUDIBLE].

PROFESSOR: Sorry?

AUDIENCE: Risk has a cost.

PROFESSOR: That could be true. But think in the context of this model. Without even exiting the model, what is happening in this model which tends to set up anything that will push the interest rate up a bit, like the cost of fund or the amount of you have or the cost of monitoring or the cost of running away? Anything that will push the interest rate a bit with feed on itself.

It appears in the math, here, very clearly, but try to think of the intuition behind this.

AUDIENCE: As interest rates increase, there's going to be more and more people susceptible to not paying it back. So therefore, it just perpetuates the negative feedback cycle.

PROFESSOR: Exactly. So it's not so much more people, but each person wants to run away more. So when the interest rate increases, it makes you run away more, which is necessary to increase the interest rate further, which makes you run away more, et cetera, et cetera, up to the point where it stabilizes. And then for some people, it might never stabilize. And these people will not be able to borrow at all.

So here you won't be able to borrow if hw is too small. If hw is smaller than c, you won't borrow. The interest rate would be infinite. Because that spiral will not stabilize. For other people, it just feeds on itself.

So now this model can explain, pretty much, all of our facts. The poor can't borrow from the formal lenders, while some people won't be able to borrow at all. And in particular, people will be not very able to borrow from places which are not able to

impose high costs. They are just going to not be able to borrow to the poor if they want to get the money back.

The interest rates are high. That's because if the cost of fund is D, the interest rate multiplier relative to that, so you can have a big wedge now. It's not only the default rate. It's like all this effort that you have to pay to get people to reimburse.

The interest rates are very variable. And, in part, because, for example, you know someone a little better. So that goes back to the question that was before about favoritism. Maybe it's favoritism. You know them better.

Well, here, if you know someone better, you can indeed lend them at lower rates, because knowing someone better, maybe, reduces the fixed cost, c, or maybe it increases the cost of running away. All of this will have big effect, big jump on the interest rate.

So you could have very large variation in the interest rate as a function of this h and c, et cetera, within the same village. So that's the interests are variable.

The rich can borrow more. That's because what you can borrow is a function of how much wealth you have. And the rich pay lower interest rates, because they borrow more. That's because of the fixed costs. And that's good to a point.

And that's all in equilibrium. In this model, there are no defaults, since everything is set up to ensure there is no defaults. So the default rates are nothing but automatic. They are the result of people setting the interest rate that way.

So I think, at an intuition level, you had seen where this was coming. But you can see that introducing these fixed costs, plus this proportional cost of running away helps us kind of cover, pretty much, all of our bases in terms of the basic facts.

And then we can go a little bit further, and we can start thinking about other things that we might try to explain with this model. So moneylenders are close to the people. So they are the ones who area able to borrow. They are the ones who are able to punish people. They are the ones for which the fixed cost is lower. They may

be able to impose large penalties, like the mafia.

An example we have in the book is, in India, people called Kabuliwala are the moneylenders or were the moneylenders of choice. I don't know if they are still there.

Kabuliwala, the men from Kabul, who had this reputation of being very fierce. So every like Indian child read the story about the man from Kabul, with his tender heart, but who ends up killing someone, because that person has treated them badly.

And so you would see a villager telling this story. Or you would see these guys coming under the pretense of selling you dried fruits and, in fact, being moneylenders. Because they are the ones who you knew that they would be able to get at you, with a very persuasive argument, if you were not going to be able to lend.

AUDIENCE: I've only read the article so far, so this might be in the book, and I don't know this yet. I was a little curious about why the banks never work directly with these people? Is it like a liability thing?

PROFESSOR: Right. So there's an example of that where Citibank, in India, decided that, why wouldn't they use these guys. So they tried to use the kind of local thugs to repossess their car loans. But once it got found out, like they ran into big trouble. And they had to stop that operation.

And it's not clear whether or not it's welfare increasing to forbid Citibank to use the goondas to recover their car loans. But they tried. And then they ran into problems with the law. So it turns out that it's not legal to kill people who don't reimburse your loan. So that was the problem, exactly. That's a good point.

There is another anecdote in the book about formal banks-- I don't remember if it was Citibank-- threatening to send people eunuchs. Because, in India, eunuchs showing their private parts is supposed to be like a bad omen. So the thing is, pay up, or we'll send the eunuch to see you.

AUDIENCE: Did you say, eunuch?

PROFESSOR: I don't know how-- eunuchs.

AUDIENCE: You know, eunuch.

PROFESSOR: Eunuch, eunuchs.

AUDIENCE: So it's just like their presence is considered like threat in itself?

PROFESSOR: Their exposition. If they expose their private parts, it's supposed to be bad.

AUDIENCE: Seriously, the banks were hiring people to flash themselves?

PROFESSOR: Not people, eunuchs. I mean, people who are eunuchs! Not just anybody. Not anyone. It's a very specialized industry.

So that explains why the moneylenders have a good business. Basically, it's a bit like, you have to resort to very complicated stuff. If you're a bank, you can't threaten to kill people, et cetera. So the moneylenders are well placed.

The problem, however, is that moneylenders don't have, themselves, access to very cheap funds. Because if you have savings, maybe giving them to a moneylender is not the best thing you can do. So moneylenders, themselves, they're cost of fund is high. And there is also a multiplier on the cost of funds, which explains why the interest rates are high.

So you'd explain why you have a moneylender doing a good job and why their interest rates are so high. So it is not entirely clear, when you're talking about driving them away, that they are necessarily bad people trying to exploit the poor. They also have their own cost of funds that it is expensive. And then they are trying to make a living in this way. Yep.

AUDIENCE: Well, if formal institutions can't work directly with the poor borrowers and enter that interaction, why can't they work with the moneylenders, since those would borrow larger sums? And they could be like a private person who would just decides to

borrow from someone and later decides to do something with it. Why can't that [INAUDIBLE]?

PROFESSOR: I think, in a lot of cases, it's sort of happening, which is the moneylender is like a big landlord, who will take a loan from the bank. So I think part of the money that the moneylender is getting is precisely coming from the bank.

So that intermediation exists. Maybe not be officially, because moneylending is often not legal. But they just go and they borrow some money. And then they relend it. And that's it.

AUDIENCE: How do these rates change with the objective of the lending institutions and the objective of the people who are receiving the loans? So if there was a social purpose, as opposed to a for-profit purpose, then the spread would be smaller. You'd be trying to break even versus trying to make some income off of the person you're lending to. And I also imagine, if you're lending to someone who is just trying to smooth their consumption, they'd be more likely to pay you back then if you were lending to someone who was trying to start a business then, who's success rate might also be low.

PROFESSOR: So in this particular model, we have assumed-- and, in fact, I'm going to come back to that in a moment-- that there is perfect competition between moneylenders. So people, are here, breaking even. So in that sense, you can't do better from that without starting to lose money.

However, you're exactly right that someone could decide that it is worthwhile for them subsidize the interest rate. For example, you are like an NGO. And you want to do something good for the poor. You could decide that you're going to want to subsidize the interest rate, a bit. And then you're going to benefit from the multiplier rate the other way.

So if you were good at it, if someone had the local presence and were able to replicate what the moneylenders are doing, in terms of lowering the rate of running away with the money and lowering the fixed cost of lending, and they combined that

with some subsidies of the interest rate, then the multiplier would play in your favor.

And that's where the microcredit comes in. When we talk about microcredit, in a way, they are still, say, trying to break even. Or they might even be willing to lose a little bit of money. And this losing a little bit of money might translate into a large drop in the interest rate. You're exactly right. If you're willing to, any profit that you're going to give away might translate into a lot of money saved, from the point of view of the lender.

You're also right on the other end, which is all of these things depend on the propensity of people to run away and things like that. If you could identify good borrowers that are not going to default, they are borrowers with a big h, in a sense. And there are borrowers you could lend to with a lower rate.

The problem is, for the moneylender or for the bank, is whether they can identify people with a low or high h or not. In this world, you would have what you see with moneylenders, which is moneylenders that charge very high rates, get very low defaults, in equilibrium, they don't need to break anybody's kneecap, as long as it's known that that's what would happen.

Another story about the moneylenders, however, is that it is not that they just have to charge this high rates and variable rates because of the fixed cost of lending and monitoring the loans, but because they are monopoly lenders.

So that's another thing that you often hear is that these guys, it's one game in town in the village. They are the only one who can lend the money to you. And therefore, they are just charging you this huge rate, just because they are the only possibility.

And you have two facts when trying to evaluate these claims. You have two facts which are pulling in slightly different directions. One fact is that, usually, in a village, you have more than one moneylender. You could have at least like four or five moneylenders, which are like the shopkeeper and then the guy who has a big land. And two or three people like that will be moneylenders. So in principle, there is competition between them.

However, you don't see people switching. So people usually stick to the same person. So it is not clear in the end. Is it a competitive situation, because, in principle, you have a choice? Or is it a monopoly situation, because, in practice, you don't switch? So what's your view of how we can try and explain that, by just enriching this model just a bit?

AUDIENCE: Well, I'm not sure how to incorporate this, but I can think of two facts. First, the person who borrows needs to have some trust for the moneylender, in the sense of like the moneylender says you have to pay this interest rate and then doesn't raise it immediately when you actually go to repay. And that requires some costs to establish this relationship. Then there's also some cost to switching, again, to establish this relationship with another moneylender. But there might be the trade-off that you hear, from other people, that the other moneylender charges significantly lower rates or something like that.

PROFESSOR: Right. So if evaluate on the cost of switching-- yeah?

AUDIENCE: Didn't you also say that the c would decrease if you stayed with the same moneylender? Because they don't need to recheck you out. So in the future, they can charge you the lower rate because of this.

PROFESSOR: Exactly. So there could be. You see, this cost of switching, part of it is the guy trying to figure out who you are. So we can think a part of the c as being paid once and for all. And then maybe you're paying c again every time you borrow.

But a part of the c might be, maybe, paid once and for all. Now, it means that, if you want to switch, you would need pay this c again. So number one, that would mean that you would pay a higher interest rate.

Number two, on the other hand, the lender, to whom you are coming, he's going to wonder about, why is it that they are switching? If the c has been paid, once and for all, you should want to stay with your moneylender. If you're not, it might mean that you have something suspicious about you.

So here, in this model, we have only included a moral hazard that is the probability

of running away with the money. But there could be an element of adverse selection. There could be some people who are more likely to run away or less likely to run away. And you just don't know as a lender. And you need to investigate.

Now, if you're trying to switch from an existing lender, lending relationship, which, in principle, gives you these lower rates, it might be because you have something to hide about what your cost is.

So the resenting moneylender is going to think that you are a high risk kind of a guy. So he's either going to spend even more effort checking you out, or he's going to charge you higher rate and lend you less money to correspond to the most risky people.

So because of that, the fact that you are switching, because it might signal that you're a bad type, makes it even less likely that you'll switch. So if we add a layer of like adverse selection. You know about yourself than the lender knows, which is realistic. Then that will make switching unlikely.

That means that you're stuck in your existing relationship, which means that the lender will try to exploit the fact that you're stuck into this existing relationship.

He will say, well, staying with me brings you a surplus. I'm going to extract some of that surplus from you, which means that, even though there is a lot of competition, ex-ante, ex-post, you might be stuck in a one on one exploitative relationship.

So that's why we can have these kind of two things together, of a lot of competition and, at the same time, this one on one monopoly relationship. Yeah?

AUDIENCE: For all this to hold true, it must be true that rates that the different moneylenders charge are about equal. Because if there was a huge benefit to switching, it might out weigh the costs.

PROFESSOR: Right. So it's to a point, it's going to equilibriate. So basically, what the moneylender that your are with is going to do is that they are going to set the interest rate just low enough that switching is not worth it.

But that means they are going to start making a profit on the people in which they have a relationship. Because now, they know that they can do better than just charging the break even rate. Because there is this gain of thing with them, which is a very big gain. Because the other people would be quite suspicious of you.

And you're exactly right. Everybody will end up charging the same rates in a village, in equilibrium. And this rate will be higher than the rate that they would have been charging in the absence of this difficulty to switch.

So that's why you could have like this combination of, you know, they are kind of running their business in a difficult situation, and they are actually taking advantage of their clients. Yeah?

AUDIENCE: I know that one of the articles that I read-- I think it was [INAUDIBLE] professor that proposed it or proposed-- or maybe it was the *Finacial Times*-- creating this central-- at least in India-- MFI, like a database of all the loans, of some way to see everybody's indebtedness, across the board. Wouldn't this help minimize the cost of switching?

PROFESSOR: Right. This kind of central database, credit registry, similar to what we have in the US, that would help. Because that would exactly solve this problem. Because then the new moneylender would know exactly what is your history.

The thing is the moneylenders are not going to enter into that. So that is something that the microfinance agencies could do for themselves. But that's something that moneylenders won't do.

There is sort of one more fact that is going to push the interest rate up that is less benevolent from the point of view of the moneylender.

The formal institution we already discussed. The formal institutions are far away. The formal institutions don't have a means to threaten people. The formal institutions, even if they were able to get people to repay, they might not like headlines of farmer's suicide and all that. So that doesn't put them in a very

favorable situation to lend.

So these difficulties in the credit market explain why, despite the effort, the formal institutions have been relatively unable to lend to the poor until now and explain why people have access to all of these moneylenders at these very high rates.

The genius of microcredit is to introduce an institutional form that solves a lot of these problems without resorting to breaking people's kneecaps. So what microfinance does-- and you're going to see that in much more detail next week. What are the key elements of the model of microfinance?

AUDIENCE: You borrow in groups, [INAUDIBLE].

PROFESSOR: And what is the group doing? What is the value of the group? See, if we put it in the context of the model, what is the value of the group?

AUDIENCE: So they insure payment for each other. So if one person defaults, the others can cover the loan.

PROFESSOR: Exactly. So where does it play out in normal debt, in term of the parameters?

AUDIENCE: It decreases the run away risk.

PROFESSOR: It decreases the run away risk. It could also decrease the fixed cost, because you know people are not running away. The cost of the monitoring, it's not that it decreases . Someone still needs to pay for the monitoring. But it is the other people. It's not the bank anymore. So there is no multiplier. The cost of the monitoring reduces. And therefore, because of the multiplier effect, you can reduce the interest rate quite a bit as a function of that.

So that's one, group lending. What else is microcredit doing?

AUDIENCE: I know two of the functions they have, like certain payment schedules and steps. And typically, they assign you some sort of consultant or someone who helps you discuss business plans and stuff like that. So your default risk is also lower, because you'll make smarter use of it.

PROFESSOR: Right. So they can reduce the default rate like that. The other thing you said is that they have this very regular schedule. So they try and reduce the administrative cost by making all of the products the same.

So the typical microcredit loan is you take a loan, and then you reimburse it in 52 installments of the same size. So that means one guy can handle a vast number of repayments in just one round. They basically go from village to village, meet with the entire center, which is usually a combination of these groups, and take all the money at once and go.

And so that reduces the c, if you want, the cost, the fixed cost of administering the loan, which, again, can be passed to the borrower.

AUDIENCE: As a result of that as well, you're making a relationship with the borrower. You build a relationship of trust and the incentive is to want to pay back [INAUDIBLE].

PROFESSOR: Right, another thing that microfinance has is that they are lending one loan, that's usually small at the beginning, and then they increase it and then they increase it and then they increase it. And that's supposed to give people incentive to continue to repay.

Although one has to wonder when that stops. Because, eventually, they might consider that they have now built up enough that they can just default with the entire money. But over the whole beginning of relationship, you are going to benefit from this incentive to continue repaying. Because now the incentive is not only I'm going to break your kneecap if you don't repay, but it's I'm not going to lend you another loan.

So making product very standardized makes it to available to hire people, who are less well known, going straight to the villages, using the group loans. All of that reduces the cost of lending, which, because of the multiplier, is passed to interest. And of course, they are often nonprofit or even subsidized, which again helps, with regard with the discussion we had before.

So I'm going to leave it here for now. And then, next time, we're going to get much more into detail about microcredit.