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**PROFESSOR:** So what I want to do is continue talking about risk. We've already talked about risk quite a bit last time. And what I want to do partly is sort of emphasize some specific points and, I think, partly go over some of the ideas that have to do with a community sharing its own risk.

So rather than risk through formal insurance markets, talk about what happens if people try to insure each other. And what that does is it creates a nice context for thinking about institutions in general and the fact that people live together, how that might actually change their-- I think it's the display settings. I think we need to move to--

**SPEAKER 1:** [INAUDIBLE].

**PROFESSOR:** OK. So how the fact that people live together in one place and have to deal with each other on a long run basis, how that affects the ways in which they can structure their economic lives to help each other. So it gets into a question which is beyond, I think, moving us beyond what we'd usually be talking about, which is individual decision making, towards a more collective action kind of perspective. So we want to slowly move towards not just what happens at the level of the individual, by why doesn't the collectivity together generate good outcomes? And this is a good in to that question.

So we're going to talk. So I'll give you a set of examples of collective action, and we'll start talking a bit about the collective efforts to improve things. I'm not sure what's happening. But we'll figure this out.

So the first, just to remind you, we were talking about risk and, in particular, the fact that poor people face extremely high levels of risk. I said that yesterday, and today I'll show you some numbers on that just to get us on to that. Just to summarize where we were last time, what we talked about primarily were sort of both that the poor face a lot of risk and that they do a lot of things to mitigate risk, but those things are not necessarily good for them.

So the examples we talked about or, for example, going to work when your income goes down. But when you go to work when your income goes down, typically that's when everybody

else's income also went down. So they also all go to work. That drives wages down and makes everybody potentially worse off. And the second example-- what's another example of a costly thing you could do to mitigate risk? Yep.

**AUDIENCE:** Farm separate pieces of land that are far apart from each other.

**PROFESSOR:** Right. Farm separate pieces of land far apart so that they don't have the same risk profile.

**AUDIENCE:** You could choose not to take a crop that might be more successful because you're worried that if you spend money to buy new seeds and it doesn't turn to be as successful then you lose more money than if you just used your seeds from the previous crop.

**PROFESSOR:** Any other?

**AUDIENCE:** Choosing a bunch of different jobs instead of specializing in one.

**PROFESSOR:** Yep. Choosing a bunch of different jobs rather than doing one. Why do you want to specialize?

**AUDIENCE:** It allows you to become more productive, more skilled.

**PROFESSOR:** So you give up-- sorry?

**AUDIENCE:** I was just going to say efficiency.

**PROFESSOR:** Efficiency, exactly. You just get better at a job if you do it more with more [INAUDIBLE]. Yeah.

**AUDIENCE:** [INAUDIBLE].

**PROFESSOR:** Yeah.

**AUDIENCE:** [INAUDIBLE] Like, if you were doing 15 classes [INAUDIBLE].

**PROFESSOR:** 15 is a high number.

[LAUGHTER]

**PROFESSOR:** OK. So I think you can see the logic of this. So the question is we already talked a bit about kind of the market for insurance. What we didn't talk as much about is why don't people help each other? One solution to this problem is just helping each other.

So the logic of helping each other is very, very simple. We each get maybe independent

shocks and so it's quite likely that, you know, when somebody else gets a shock, I don't and vice versa. So we can kind of split the shock. So if anything bad happens, we don't bear all of it. We can pass on a part of it to somebody else.

That seems straightforward. So why doesn't that solve most problems? That's sort of the question that we're going to spend some time thinking about. It's a very simple idea, right? We don't need to go to an insurance company. We can just pool together our own risk.

**AUDIENCE:** [INAUDIBLE] like, the cost of living [INAUDIBLE] cost? Like, how many people are you going to pool together for that? And sometimes people think that they shouldn't have to pay for someone else's--

**PROFESSOR:** How many people should we pool together?

**AUDIENCE:** As many as possible.

**PROFESSOR:** Why as many as possible?

**AUDIENCE:** Because then it's more diversified.

**PROFESSOR:** Right. So if we think that-- so you have the example, the probability, here, let's say they have independent probabilities. Two people, they have a probability of a quarter that they both end up with a bad shock, right? What's that probability if there were  $n$  people?

**AUDIENCE:**  $1/n$  squared?

**PROFESSOR:**  $n$  squared. Think about what were the probability. The probability is half that-- I think you meant the other. You just inverted the exponents. It's  $1/2$  to the power  $n$ . I think you're writing it in-- it's  $1/2$  to the power  $n$ .

So as  $n$  goes to infinity, the number of people who get shocks together is going to 0. So that's sort of a very simple idea. So the question is why doesn't it happen? And that's sort of what we're going to spend our time talking about.

So it does happen. The first answer is it does happen. So here's a nice, nice example. And it says something about-- actually, it's an interesting example.

So it turns out that the way to work in Nigeria, I don't actually give you money. I don't actually give you money when something bad happens to you. What do I do? I loan you money and in

particular if you're expected to pay me back, I ask for less payback. If I'm expected to pay you back, I pay you more than what I was supposed to owe you.

So usually interest contracts tend to be completely inflexible. You know, my mortgage is quarter of 5.4%. I pay 5.4% every year until the market is paid. That's not what credit looks like in Nigeria. In these villages you found that the interest rate itself is very flexible.

So I pay more than what I owed, in some sense, when you are doing badly and I pay less than what I owed when you're doing well. That's a way to provide insurance, but it goes through this cover of a loan.

**AUDIENCE:** How do they determine if someone has an adverse [INAUDIBLE]? You know, like, through word of mouth?

**PROFESSOR:** Perfectly good question. We'll come back. Let's come back to that. I want to spend a minute, before we get to that question, on a more basic question, which is why do you think they do this?

Why do you think that they go through this loan mechanism? So then what they seem to be doing is paying you more on your loan when you do badly and paying you less on your loan when the payer is doing badly. Why does that make any sense? What could be driving that structure? Yep.

**AUDIENCE:** Because they know that later on when they'll probably be doing badly that they'll get a break and that it'll help them out.

**PROFESSOR:** But why don't they just give them money? Why through the loan? The question here I'm asking is why is it that I give you a discount on your loan rather than just handing you some cash? What is that pointing to?

**AUDIENCE:** Desire to not to feel like you're giving a handout.

**PROFESSOR:** So one possibility is that you it's sort of a cover, right? That's an interesting idea. It's a cover for I'm giving you the money. But it's not so much that people are not seeing that I'm handing you some cash. They're seeing that I'm actually paying you some money back for a loan.

So in that sense it's a cover. Maybe everybody else also knows that you are poor. It's not so clear that it's so hard, you know. You had a comment?

**AUDIENCE:** They don't want them to think that, become dependent on things like that being free or, like, kind of expect that they're going to get handouts all the time?

**PROFESSOR:** Well, why would that be any different? I could always say that I'm doing badly, and you'll pay me more on the loan I gave you. Why would that be any different to loan?

**AUDIENCE:** Maybe because it creates some sort of dependence relationship between the two people. So if you have to agree to it beforehand, the other one can just say, well, [INAUDIBLE].

**PROFESSOR:** I will come back to that. Yeah.

**AUDIENCE:** I was just going to say that it sort of sets up a contractual agreement where when I'm not doing well, you help me out and when you're not doing well, I help you out.

**PROFESSOR:** Right. Yeah.

**AUDIENCE:** You could also say that if someone just gives you money that's kind of expected to get some of the money, something non zero benefits, a loan that you have to repay, there isn't really a guarantee how much of a discount you're going to get. You can't really take that into account as well.

**PROFESSOR:** So what you're saying is related to what they're saying, which is that one thing about a loan is using the loan suggests that this is making use of a preexisting financial relationship, so an ongoing relationship. The difference between my giving you money seems to be mostly that in a sense these are people who already had a financial relationship. So it's the case that a lot of these people, one owes the other one money already.

And adjusting the terms of that suggests that it's not so much-- so in other words, it's not clear that what this isn't telling us is simply that the people who have these transactions are already people who've had a stock against each other. So it's not the case that-- so it's, you know, you keep count and say it's not clear. So instead of thinking of the loan as being a separate financial product, one way to think about it is that we keep accounts.

And I've done you five favors. You've done me three favors. And the net is two favors. And the loan amount really reflects our netting out of those favors.

So in other words, what is nice about a loan is it's a net I owe you or you owe me. It's a net accounting device for keeping track of who's done who how many favors. So by thinking of it in

long terms, it creates a natural framework for thinking about this as kind of a social accounting device. How do I keep track of-- like, maybe people also say, well, I did you seven favors and you've not done me one. I have heard people say things like that, so the same psychology.

It's a good way to keep track. Thinking of it in terms of a loan makes it clear that what you're trying to do is keep track of an ongoing relationship. It's a stock. I gave you 100. You paid me back 50. Then I give you 30. Then you give me 200.

And when I add those up, every stage, what I really care about is not how many times what happened but the net amount you owe me. And that's a good way to account for the relationship so we can keep track of am I someone who owes you or are you someone who owes me by sort of counting that amount. And that way we don't need to keep track of all these other numbers, whether it was 20 ones and 15 another time.

It's just one number which kind of measures our collective obligation. And the reason that we would like-- why would we like to keep track of the collective obligation? Why does it matter that we keep track of the collective obligation?

**AUDIENCE:** I mean, it promises them security, right?

**PROFESSOR:** Security for who?

**AUDIENCE:** I would say that in the community because one person who was taking thousands of dollars from someone else, I'd know that if that person asks me for money, I wouldn't loan the person [INAUDIBLE].

**PROFESSOR:** So one advantage of that might be that it kind of summarizes my status in the collective system. So it may be that everybody knows I owe you 50. And then nobody will want to lend me much more because it looks like I'm just somebody who takes money from everybody and never gives them. So it's a good way to keep track of whether there's someone who sort of tried to beat the system. But there's another even simpler reason why.

**AUDIENCE:** I guess [INAUDIBLE], which is basically the same thing.

**PROFESSOR:** Speak up.

**AUDIENCE:** Just to be a way to avoid moral hazard, which is essentially basically the same thing.

**PROFESSOR:** Why would they avoid moral hazard?

**AUDIENCE:** Because it's an accountability system. So, like, everyone in the community is kind of aware of it's a way of keeping track of it on a smaller scale at a larger company. For example, like, in the city couldn't do it.

**PROFESSOR:** Right. That's basically the same thing. But in some ways I think there's an even simpler reason why you may want to keep track of it, which is simply it may well be that I just knew vis-a-vis someone else, he may want to know, how many times has this guy taken from me? And I may want to just put a limit to that because I know that at some level I'm going to die in 20 years or something.

And so I'm going to say, look, you know, if it's reciprocity, so that the reason I'm giving him is x, that he will pay me back eventually, then I want to know whether it's reasonable to expect that I'll get enough back from him. So if I think that basically the reason why I'm giving him the money is because he will eventually give me back the money when I need it. Well, if my future is 20 years and I've given him \$5 million dollars, I'm unlikely to get that much back.

So I want to know roughly where I am in that transaction because that's the only way that I can kind of make a rational decision about whether it's worth continuing. If my reason for being in the relationship is that I also think that I'm going to get some favors from him then knowing how much he already owes me is a way to keep track of how much can I reasonably expect to get back from him. If that number's already way past anything then I don't need to give him extra favor to get more back.

At some level I'm just not going to be able to collect. So if there's some kind of a rational-- so I might want to limit my exposure to him because in some sense I know that it is never going to pay off to invest so much in a particular person. So it might be a useful accounting device.

So I think that Chris Udry, who did this study, his interpretation very much was this. They're keeping track of how much they owe each other, that everybody knows roughly I owe this guy this much, which is within reasonable limits. It's not too much. And, therefore, I can expect to get it back eventually.

So this is a table from Chris's paper. And it's just a very simple point, but it's worth looking at the paper. It's sort of striking. So it's the monthly interest rate.

These are huge numbers. That's why it's worth looking at. The monthly interest rate, when the borrower gets no shock, he pays four percentage points less per month. That's a lot, right?

Four percentage points. What's four percentage per month compounded? What's the compounded?

**AUDIENCE:** [INAUDIBLE].

**PROFESSOR:** Close to 50%. So that's like 50% off. So you're getting, like, 4% per month less. Now take a look at the number. When the lender, he has a bad shock, no shock, he charges basically 10 percentage points less per month than when he has a shock.

Difference would be minus 7.5 and 2.6, is basically 10 percentage points. But when he has a shock, he charges 10 percentage points more. So these are massive numbers. I mean, those are, like, huge. The interest rates just move enormously suggesting that there is actually substantial resource transfer that's going on. Yeah.

**AUDIENCE:** So is this like he actually charges or the person just chooses to pay more?

**PROFESSOR:** He chooses. So we don't know that. All we observe is that the person pays that much more when the lender gets a shock. But the difference, just to get the order of magnitude, these are very, very large numbers. So these are substantial transfers going on in both directions.

On the other hand, there's still 10% of a loan. So it's like, you know, the stock is much bigger. So these people have an ongoing ledger with each other. And then they change that number by changing the interest rate by a lot.

Now, what's that also telling us? It's also telling us something about the scope of this relationship, right? So if the way I'm going to get my insurance is by getting even a 10 percentage point reduction in the interest rate-- so let's say the interest rate is 15%. And I get 10 percentage points off, but I owe you \$100. How much do I save?

I save \$5.00, right? I was going to pay you \$15, and I now pay \$5. The main point is that the amount of insurance that you can get through this system is still very limited by the amount of loan there is because, you know, if I'm giving you a discount on a loan then that depends on the loan amount I had.

So if the loan amount was \$1 million then a discount on that is worth a lot. If these are poor people and their net loan amount is \$10 then the fact that I'm getting a discount from the loan is not giving me that much insurance. So the downside of thinking about it in loan terms and in principle, this could be relatively small number.



So I think these interest rates are high. But they're not high enough to turn a small number into a small number. So that's sort of one thing to keep in mind. We'll come back to this because I want to talk a little bit more about other forms of insurance.

So one form of insurance we observe is this loan. And that has its advantages, and it's a nice accounting device. I can keep track of what's going on. It has the disadvantage that if I haven't given you a loan then I can't help you. It sort of goes through this loan.

So if you only owe me \$5 then it's not going to be a big transfer because you can, at most, let off the interest on the \$5. But the interest on \$5 is \$0.50. And that's not going to make a big difference to me. So in general that limits the scope of the system.

And what I want to talk about is a bit of stuff from Thailand, which is different because our colleague, Robert Townsend, has been studying these villages for many, many years. And I'll show you some data from what he's collected. And then we'll see that the way insurance is offered in Thailand is very different in principle. And so institutional form-- in Nigeria it's a loan. In Thailand we'll see what it is.

So first here's a nice table. It's sort of a fact that I've been saying many times. It just says how much risk do people bear?

So what this table is, each row is a farmer. They don't have data for every farmer. But two things to note. One is look at the best year and the worst year for these farmers. They're somewhat correlated but not perfectly, right?

The best year for some farmers was '85. The worst year for some farmers was '85. The best year for some farmers was '88. The worst year for some farmers was '88. Why am I emphasizing the correlation? These are all within the same village, within one village. Why am I emphasizing the correlation?

**AUDIENCE:** To emphasize that the shocks are independent.

**PROFESSOR:** Yeah. So that there is scope for insurance. I can insure you only if we don't both get into trouble at the same time. So the worst year for one farmer is not the worst year for the other farmer.

The second thing is look at the magnitudes. That last column is the percentage. If you look at

the harvest amounts, the best year and the worst year, the differences are massive. It's just the amounts. I just want you to look the amounts.

The amounts are impressive because think about you got an income of 50 one year and 115 the next year. Those are big differences. Anything else that strikes you? Now, this may be difficult to see.

But one thing that's interesting is that if you look at the-- it's not that the people who have average less harvest, the risk seems to be independent of that. So richer people seem to have roughly the same risk as poorer people. So everybody seems to be exposed to risk. It's not that the rich people have less risk.

**AUDIENCE:** How do you define richness?

**PROFESSOR:** Take the maximum amount of harvest, the maximum harvest, the people with the biggest maximum harvest [INAUDIBLE]. This table is nice too. It goes back to answering the implied question. What's going on? What's the source of risk?

**AUDIENCE:** These are all the same households?

**PROFESSOR:** Sorry?

**AUDIENCE:** These are all the same households?

**PROFESSOR:** No. Yeah. These are the same households as the previous table, same numbers, B35, 36. These are the same households. They all live in the same village.

And this is asking why did you face risk? And, again, mostly it has to do with weather. Though, for some people, there's one person who says that insects is the biggest source of risk. Yeah.

**AUDIENCE:** I don't fully understand how someone's best year was also someone's worst year, how rain could be the problem--

**PROFESSOR:** Yeah. Someone else want to suggest the answer?

**AUDIENCE:** I mean, I think it indicates that-- I think there's two potential answers. One, rain could be the answer. Maybe some of these fields are irrigated. But judging by the variation on even the wealthiest fields, which presumably would have the greatest chance of irrigation, the fact that it's still pretty big fluctuations, that's probably not the answer. I mean, I think it's indicative that

there's other factors at work other than rainfall.

**PROFESSOR:** But they're saying that it's rain.

**AUDIENCE:** Sure. I mean, maybe because they don't realize. I mean, I think if they realize what the other farmer was doing that [INAUDIBLE] more successful, they'd probably try to do it. So maybe they didn't realize that fertilizer-- and maybe that they got unlucky and got hit with a disease they weren't able to recognize.

**PROFESSOR:** They didn't realize. That could be. Go ahead.

**AUDIENCE:** It could be different crops.

**PROFESSOR:** Yeah. So most of this explanation is that some of them are doing very different crops. So it might be some crops hate water and others really like it. Like, rice really adores water. But cotton or chilies hate water. So there are crops which you get too much rain, you get lower output and crops which output is always increasing in rain. And so one possible explanation is that they were planting different crops.

So we both planted the same time. I'm planting a crop which will hurt if the rain is bad and will do well when the rain is good and the other way around. So that's one possibility.

The other possibility is that they're just micro climates, that the rain is sort of-- after all, what matters is not so much rain as such but rain at the right time. So I plant on a particular day. My saplings have just come out of the ground. That's when I need rain, when the plant is young.

And so it may well be that the rain on those five days was very good. But then the guy who planted later, he thought the rains would be better in five days. And then the rains were really not better. They were really bad.

So it may very well be that there is either geographical variation in rainfall within a local area or just over time. So I planted on a particular day. I needed the rain 10 days after that when the saplings came out. I got the rain. You didn't get the rain. So I think both of those are plausible.

So I just wanted you to look at this because I keep talking of risk. But this is sort of a much better way to look at it. You just see the magnitudes of it and the sources of it. So I thought these tables were very nice.

And what he goes on to do in this paper is asking how do people deal with risk? And so he's

describing three villages very close to each other, to the point where one of the villages, people actually use the financial institutions in the other villages. So they're very close to each other.

They're exactly in this area where the rainfall was measured. So the risk is roughly what you saw. So we got a sense of the risk.

And in Nigeria we saw that people respond by borrowing from each other. Here, in this particular village, there are five different funds. So there's a village savings fund. And the village savings fund is actually an equity fund.

These guys actually pay you a different rate of return depending on what the borrowers were willing to pay. So I put in money into this fund. And then you come and borrow. You're willing to pay 20%. Then that money gets rolled back to me.

So it's a fund which has a variable interest which depends on the village demand levels. What do you think should happen to the interest rate in that fund when the rainfall is good or bad? How would it pay? Will it go up when the rainfall is good or down?

**AUDIENCE:** Won't it go up because people are willing pay more [INAUDIBLE]?

**PROFESSOR:** So one possibility it will go up because when the rainfall is good, productivity is high. People are willing to buy more inputs to produce. Is that good for insurance or bad for insurance? Yeah?

**AUDIENCE:** [INAUDIBLE]

**PROFESSOR:** That's good for insurance because the people who are getting high productivity shocks are borrowing. But you would imagine the opposite, which is a fund with a variable interest rate where we only borrow from it when we're desperate. Then you might see the demand for those funds being particularly high when rainfall is bad because we're all trying to borrow from that to survive.

And at that point, very few people are going to lend. The interest rate is going to go up. That's going to be bad for insurance. So it depends very much. Rather a fixed interest fund, a variable interest fund can be either good or bad for insurance.

Then there is a fund for purchase of pigs. Here, the interest rate is fixed. But there's a rollover

provision. Rollover provision is if you are in trouble and you can't pay, I can let you keep the loan for longer. You pay more, but you don't have to pay back now. Is that good for insurance or bad?

**AUDIENCE:** Well, it depends on the person that they're insuring. If the person [INAUDIBLE] they can keep rolling it over and eventually drop out. But it could be good if the person is experiencing some transitory shock [INAUDIBLE].

**PROFESSOR:** Assuming that the person is going to pay it back, it's good for insurance. Rollovers are good for insurance. There's a fund for purchase of fertilizer. So each of these is almost like a proper financial institution at the village level.

So in this village, the leader has organized a bunch of funds. And you can save money to buy pigs in this fund. And right now if I've saved money and you want to buy pigs, you can borrow from this fund.

And, likewise, there's money in a fund for buying fertilizer, a rice bank where the rice I grow I can store. And when I need rice, I can take rice from it. And there's a health care fund where we each put in money. And if somebody gets sick, he gets to spend it.

So this is a village which is rich with financial institutions. These are not loans. In particular, the health care fund or the rollover is something where I'm making a direct transfer to the people who are hurting.

But it's not bilateral loans. These are kind of financing from a financial institution. So the main point I'm making here is that here you see a very different sort of insurance. This is organized through collective action. Everybody's getting together and lending to everybody else.

Now, he goes down a few more miles from May Wak to a village called Sop Wak. And what does he see? Well, on paper it looks very similar.

But here's the problem. All the loans are in default. Not all, but a lot of loans are in default. Is this good or bad for insurance? Anybody else? Why is a default bad for insurance?

**AUDIENCE:** Because then the people who are putting in the money won't get any money.

**PROFESSOR:** But maybe the person who is defaulting is the one who needs to not pay. It's so clear that default is bad for insurance. The problem is with this default then nobody will put money into

the bank.

So default is, in a sense, a form of insurance, right? I allow you to not pay when you can't pay. But if there's a lot of default and I think that's mollified then I may not put money into the bank.

So, again, it's not clear which way it goes. But he interprets this as saying that these places, these banks, nobody's putting money into them. So these banks are kind of defunct. Yeah.

**AUDIENCE:** How could it default and not repay?

**PROFESSOR:** Oh, we could imagine a world where that's exactly how we provide insurance. So we each imagine that the rule is. Year one, if you have a shock this year, you borrow. Even year two, if you again have a shock then you default.

We write it off, happens in one time out of 10 or one time out of 20. But, you know, it can happen to any of us. And when it's really bad and I've had two shocks in a row, it's better for me to not have to pay back than you to give me yet another loan. There's no particular reason why default would be bad for insurance if we could make sure that the default is limited.

**AUDIENCE:** Doesn't the insurance company just lose all that money though?

**PROFESSOR:** Yeah. But it counts into its-- the insurance company is losing that money. But remember, when an insurance company makes a payment, it also loses money. So just think of it as a form of payment.

Default could just be a form of insurance because I could be paying people in the form of default. You don't have to pay. Fine. You don't have any money, you don't have to pay.

That's a perfectly legitimate form of insurance. Just the question is whether it's deliberate, in which case there will be too much of it. And in that case the system won't work. Yep.

**AUDIENCE:** That may be the case when there's an insurance company or a government which is writing off the loan. But the latest census [INAUDIBLE].

**PROFESSOR:** I guess a lot is relative to what they're willing and what they were planning for. There's nothing else about a lot of default. It's just what you're planning for.

I could plan for, you know, one loan out of five will be defaulted, and the others will just absorb that loss. It might be fine. It may be a form of insurance.

Default is a natural form of insurance. That's a way of understanding. There is nothing obviously bad about default if it's completely just I have no choice. I default.

That's a perfectly good way to insure myself because then I don't need to pay when I'm in really bad shape. It's when I start using as an excuse to not pay that it makes a difference. Yeah.

**AUDIENCE:** I think I'm getting tripped up because usually default is when the intent is for you to get that paid back. So if you're using default as a form of insurance, to me, it's no longer default then. It's just a form of insurance.

**PROFESSOR:** OK. I kind of agree with that. I mean, that seems like we're arguing over words. So I think default just means I don't pay the loan. And when I don't pay the loan, that might very well be desirable.

Now, as you see, their view is a bit that it's not actually necessarily a good idea to collect because they're taking the view that these people are defaulting because they need to default. So it's not clear what default means here. And that's worth understanding.

Then he walks down to a third village. The third village is a few miles down. And none of these funds exist. So one village, all the funds are working well. In the second village, there's lot of default. The funds are still there.

Third village, no funds except one. And you are in the Nigerian mode where you're just borrowing from each other. So what's the advantage of a fund over borrowing from each other?

Let me see if someone else wants to answer. What's the advantage of a fund over borrowing from each other?

**AUDIENCE:** They have more resources for you to borrow?

**PROFESSOR:** Why?

**AUDIENCE:** One individual has a limited constraint, whereas if people pool their money together.

**PROFESSOR:** Right. It's a way to pool many more people in. So that's the advantage of a fund. So what do you think is going on? Why do these villages, which are very similar, have same kind of risk next to each other, have very different patterns? Think about what it takes for such an

institution to exist.

**AUDIENCE:** They need the trust of the [INAUDIBLE].

**PROFESSOR:** Right. So the way one of these funds works is by saying that I'm going to put money into it now because I can get money into it in the future. What does that assume? Yeah.

**AUDIENCE:** It's going to exist in the future.

**PROFESSOR:** That there is a future. So in other words, if I think that everybody else is going to default today, I should default as well because there will be no fund in the future. So this is a classic kind of problem of anything that's sort of sustained by the future. It depends on there being a future.

So this is the problem that right now a lot of microcredit organizations are facing. Microcredit organizations promise you a loan if you pay back your loan. Now, suppose you think that nobody else will pay back their loan. What's going to happen to the microcredit organization?

It's going to go bankrupt. If it goes bankrupt, what's going to happen to your future loan?

**AUDIENCE:** It doesn't exist.

**PROFESSOR:** It doesn't exist. So basically if everybody expects people to default in the future then I should default now. So if everybody else is expected to default, it is rational for me to default. If everybody expected to pay back in the future then it's rational for me to pay back because then the fund will be there for a long time.

So I think this is sort of the reason why funds-- so all of these kind of informal institutions are fragile because they rely on this kind of coordination. I only want to repay if everybody else wants to repay or at least as long as enough people want to repay that the fund will be going. If I expect that lots of people will default in the future, I should default now because the fund is going to go out of business.

I'm not going to get anything out of it in the future. So I might as well just stop having anything to do with it. So it totally depends on trust.

If I believe that everybody else is going to behave well then I should behave well. If I think that everybody else is going to behave badly then it's over in some sense. That's one central weakness of these kinds of informal institutions. They rely on the expectation that I'm going to behave well in the future. Yeah.



**AUDIENCE:** Well, if everyone else is going to pay back in the future, wouldn't it still be better for you to default now if you were being selfish because the fund's still going to exist whether or not--

**PROFESSOR:** No. But then you can't borrow again. Then they can say, look, you defaulted. You didn't pay the money when you needed to. You were supposed to pay money into the fund. You didn't pay. Now you're out.

But if you come and ask me to put money into the fund and I know that everybody else is planning to default, I'm never going to do it. And if I ever get a loan out of it, I'm going to default as soon as I can because I know everybody else is planning to default.

So in these kinds of institutions, default is entirely sort of self-fulfilling. So if I expect default, I'll have default. If I expect people to behave well, we'll probably all behave well. So probably the reason why these villages are so different is because of this expectation mechanism which is very important to understand.

And it's true of lots of financial institutions. They rely on our future compliance to work. And that's why, for example, even banks to some extent-- if I decide that I'm going to withdraw my money from the bank, everybody is going to withdraw money from the bank tomorrow, what should I do today?

**AUDIENCE:** [INAUDIBLE].

**PROFESSOR:** I should withdraw today. That's a bank run. So a lot of financial institutions have exactly this feature. And that's why it's not so surprising to see that some villages have very good institutions, rich set of institutions, others don't. The fact that some villages have default, it's the same reasoning. Once people start defaulting, everybody's going to start defaulting. Yeah.

**AUDIENCE:** Could it be possible that in one village a default is costlier than in another village? Maybe, like, socially you'll be ostracized or something like that, and that will help support the program where everyone pays into the fund?

**PROFESSOR:** Sure. So it could very well be that another thing that this tells us is that, for example, a leader matters. So if the leader is someone who can enforce punishments in the village so if I default-- suppose I'm supposed to pay back, and I know I can pay back but, you know, I just refuse to do it. If the leader can basically have me ostracized then, in some sense, I'm not going to do it. And then given that I'm not going to do it, everybody else is willing to pay into the fund.

So it's going to be huge leverage from effective leadership. That's the other actually conclusion of this paper is that there's a good leader in the first village, and he was very important in setting up these institutions. He made them work. Yeah.

**AUDIENCE:** I was actually going to ask that. It seems that you have to someone who's a good leader in order to make these things work. But what was that guy or girl doing to keep people confident of the performance?

**PROFESSOR:** I can't tell you. It said that the leader was very energetic, et cetera. There's a description of the leader, but it doesn't tell me what he was doing so much. OK, so we already talked about moral hazard-- other limits of insurance.

But I wanted to emphasize that because I wanted to emphasize that this is not just a limit of insurance. It's a limit of any institution that is not enforced by legal punishments. Anything that's not enforced by legal punishments is fragile always.

It will work if it works. It doesn't work, it doesn't work. That's sort of the main point of that example. If we all stop paying money into the fund then the fund will die. So I might as well take my money and run.

That's true of not just insurance but of any other kind of institution. Now, moral hazard, we've talked about. I'm going to skip moral hazard.

Here's another problem with informal insurance. This is all what we've been talking about a bit. So we've been sort of talking about implicitly default. But we've also been talking about one thing that an insurance arrangement demands is that when it's your time to pay, you pay.

Sometimes you get money from the fund. Sometimes you pay into the fund. You have to be willing to pay money into the fund. That's what keeps it going.

Why do you want to keep putting money in the fund? We said this already, but just to repeat. Today I am rich. I want to put money into the fund so that somebody else can take it out. Why would I want to do it? Why does anyone want to put money into a fund?

**AUDIENCE:** [INAUDIBLE].

**PROFESSOR:** Sorry?

**AUDIENCE:** To get more money back.

**PROFESSOR:** Yeah. Eventually you pay me some return on the fund. But if it has to have an insurance component then it has to be that the return I get on it is lower than the market return because otherwise they could have borrowed from the market. It doesn't provide any insurance.

So it can't be just because I want to get the money back. It must be because I expect that I will be able to borrow from the fund in the future as well. So I will be willing to put money into a fund which pays lower than market rate, which is what insurance is. Insurance is that I'm willing to lend to someone at lower than market rates so that when he's in bad shape, he doesn't suffer too much. That's what's insurance.

**AUDIENCE:** It's probably also probably the reason why wealthier people would be less likely to give into a fund, right? Because they're already exposed to less risk than they have already.

**PROFESSOR:** Exactly.

**AUDIENCE:** I thought you said that why would a rich person do it. Because I was like, I don't know why a rich person would do it.

**PROFESSOR:** Well, one reason they may want to do it is that they feel the same need as-- so what's an insurance fund? An insurance fund is a fund where I put in money so that other people can be helped in return for the fact that they will put in money and I will be helped. Why would I put in money now?

Because I expect to be helped in the future. So what are the kinds of people who don't want to join that fund? You already gave one answer, which is people who are rich.

They don't expect to get helped. So that's why you're going to see that if there's a lot of inequality in the village, you're unlikely to see a fund because the rich don't really think that they can be helped by the poor. If they ever need money, they're going to need, you know, \$100,000. The poor won't have it. And, otherwise, they won't need money. Yeah.

**AUDIENCE:** I think the chapter also mentioned timing as one factor. I mean, if people always postpone, they value future outcomes less than [INAUDIBLE].

**PROFESSOR:** Right. So you need to be forward looking to be willing to behave well and be forward looking. If I always think that, well, I'll just not pay now and whatever happens in the future, that's not

going to work. You need to be forward looking. And what's the point around migration? Why is migration important?

**AUDIENCE:** Could you say that as you have to expect to be in that area to benefit?

**PROFESSOR:** In the village, yeah. You need to be in the village to benefit from the fund. If I expect to go away, I don't know whether I'm going to be here to benefit from this fund. So if there's a lot of mobility in a place then everything falls apart.

So villages that are closer to the road, to a big city, find it harder to insure each other. Why? Because everybody there has a link to the city. So they don't know whether they're going to help from the village or they're going to go to the city and get a job there.

And so given that I am not committed to being in the village, it's very hard to give me insurance. So all of these things. You need low mobility, low inequality, and forward looking people. Yeah.

**AUDIENCE:** Also we should say there are people who have access to ways to save their money Right then--

**PROFESSOR:** That's an excellent point. What would a bank account do? A bank account would undermine insurance. Why?

Because in a bank account I now can get high return on my savings. So when I have money, it's more tempting for me to put it in the bank account rather than put it in this fund, which is going to pay me a lower return because it's trying to help out other people. So any outside options that you provide-- so financial development might undermine local institutions. So you might actually see worse institutions where the financial system is better formally. Yeah.

**AUDIENCE:** I misunderstood the whole fund. You said that the market rate was higher than the fund rate.

**PROFESSOR:** Yes. Yes.

**AUDIENCE:** So even if there was a bank and you experienced some hardship, you would be more inclined to borrow money from--

**PROFESSOR:** Oh, absolutely. It's the other way around. The question is who do you borrow money from? If the bank does it, it makes it too easy for me. Today, I have money and you need money. I'm going to put my money in the bank. That's why you can't get money from the fund.

The fund is a two way street, right? I need to put in money. You need to take out money. As my options of putting money elsewhere get better, it's going to be harder and harder to force me to put money into the fund.

**AUDIENCE:** Even if the rates at the other places are higher than the rates at the fund.

**PROFESSOR:** Especially, right? Let me be clear. What are we saying? There's a fund. What's a fund? The fund is that I put money into it. I get lower than market rates. Why? Because I want to give that money to someone else who needs it desperately, providing insurance.

There's also a bank, which pays the market rate. Now, as the market rate gets higher, it's harder and harder for the guy who has money today to not feel tempted to put his money into the bank. Yeah, you had a comment.

**AUDIENCE:** But, like, there's a threshold, right? You have to have a certain amount of money before you can open a bank account.

**PROFESSOR:** Sure. So maybe the bank is not actually available to you. But if the bank is available to you, that might actually be bad for insurance. That's sort of maybe surprising that a bank shows up and that actually undermines people's ability to insure each other because it's too easy to now park your money elsewhere.

Other reasons why informal insurance doesn't work very well, we've also talked about the coordination quite a lot already. If I expect to default on the fund then you will default too. That's coordination.

Also you would expect that these funds only work because I know when you really need money and when you don't because otherwise you could always say I need money. So you're not letting people who are very isolated-- so people who are not in the village network don't get into these funds. They tend to be of people who are relatively well connected to the village community. Why?

Because I need to know whether you're lying or not. And if you live next to me I know that, yes, your cow died or whatever. Your pig was eaten up by a tiger or something, whatever happens to pigs. But if you live far away, how do I know whether you are in trouble or not?

So it tends to be that this is concentrated among people who know each other. The scope of

the insurance is limited. And, finally, in some sense, this is a very bad mechanism for dealing with shocks which affect everybody in the village, obviously.

If there is one blight in the village which affects everybody, this is not going to help anybody because nobody can help each other. So that takes us back to where we were at the end of the last lecture, which is saying on the other hand, formal insurance markets are hard to develop. That's where we ended last time.

We said formal insurance markets are hard to develop. Why? Because people are suspicious of these products. They don't understand them. They're too complicated. They have all these exclusions, which you don't understand. So you don't like it.

I was telling the story of all of these women who got really upset because one of their friend's husband died. But the medical health insurance didn't pay for it. Health insurance was actually right in not paying for it in formal terms because their contract said we'll only pay for people who go to the hospital. He died at home.

But they thought that, well, something bad happened. Why aren't you paying for it? So they basically got very upset. So insurance is confusing. Formal insurance has rules, which if you [INAUDIBLE] you don't understand. It tends to be quite limited in other ways.

I know a lot about my neighbors. I know if his cow was eaten up by a tiger, for example. Insurance company doesn't know anything about my neighbor, so it can't insure things like that.

But there's a very nice story. So cow insurance-- I bring up the example because it's a good example. Insuring cows is a big issue in every developing country because cows are a major asset. In some countries, like in Botswana, it's the single biggest asset other than diamonds, it turns out.

So there only two major assets in Botswana. They are cows and diamonds. But most people have cows. Very few people have diamonds.

So insurance companies have been trying for a long time to insure cows. The problem is that you insure cows by saying if the cow dies, I'll pay you money. But it's convenient for cows to die because they turn into steaks. And steaks, many people like them.

So they create a huge moral hazard problem. So this company, [INAUDIBLE], had a very

clever idea. They said that if you claim that your cow has died, you're to bring me the ear of the cow. Dead cow, you're to cut his ear off and show it to me. I don't know. What happened?

**AUDIENCE:** A lot of earless cows?

**AUDIENCE:** So everytime my cow died I would start cutting off ears and creating, like, a black market [INAUDIBLE].

**PROFESSOR:** Right. So imagine my cow dies. I'm not insured. What do I do? I cut off his ear and sell it to somebody who's insured. It created a robust market for cow ears. Everybody was buying cow ears to go to the bank and collect insurance.

So that's your primary problem with sort of formal insurance. They don't know where the cow died. They have to figure out a way to track that down. That's not easy to do because of this ear problem.

So basically we're between a rock and a hard place. People don't understand insurance. Insurance is incomplete, at best, because you can't really insure cows because I don't know when your cow died or not.

On the other hand, if we look at insurance that comes from the community, the people who have the information, that is too limited for these other reasons we've discussed. So we were kind of between a rock and a hard place. So I think the message of this particular area is that this is a classic area where a government providing some kind of insurance that's not expected to break even is much more efficient.

So rather than thinking of insurance which is market supplied-- for example, a government scheme which says you can come to work whenever you need to work and we'll pay you a minimum wage is very effective because the wage is low enough. You're not ever going to take that job if you have a real job. You only take it when you're desperate.

So that's a very efficient way to provide insurance. Now, the problem is that that's not going to fund itself. It's a one way payment from the government.

But on the other hand, it makes sure that anybody who is really desperate can find a job and therefore it secures them. So in some terms this is a classic area-- or if you think of insurance where people don't understand the product, well, they don't want to buy it because they don't understand the product. But if you provide it free, they'll take it.

So if the government were to actually subsidize insurance, that might be a very good way to help poor people because it's something that they don't understand that's good for them. The demand is too low because they don't know how to interpret it. On the other hand, they will get the benefits from it.

I think insurance is a very, very natural place for public intervention. And I think that's sort of what makes it really interesting is how to design good insurance products for poor people which possibly combine some advantage of the market and some advantages of public funding. So, for example, instead of the government providing health care, maybe everybody should have health insurance with some appropriately designed coverage.

And maybe that should be provided free to people. If they don't understand the value of it, that's fine. In the end, sick people are a burden of the government. So they might as well provide it ex-ante.

Providing a job to everybody-- work fair is the word people use in the US-- to people who want a job is a way to make sure that people, when they're desperate, there's some way of generating income and that the wage at that income doesn't go down because everybody's demanding a job. So in some sense it's a way to secure people. And it's a way to do it efficiently, to make sure that the right people go to it.

You don't want to give them money. You want to give them a job because a job has the advantage that you get targeted. So in some sense it's a good domain to think about public policy. I'll stop here. We might talk a little bit more about it later.