

**STEG Virtual Course on  
"Key Concepts in Macro Development"**

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**Supplemental lecture: Labour market frictions and development**

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[Presentation Slides](#)

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Q: It seems like transaction costs (like transport costs) are used in the same way as search costs here. But we usually distinguish these by what they imply for the information sets of individuals, right?

A: I think of search costs as a subset, certainly information driven, of transaction costs, but to some extent it is semantic.

A: They are certainly different types of costs. And they point to different policy approaches, I suppose. For instance, transport costs might require building roads... whereas search costs might be about information constraints.

Q: Can Mark comment at some point on how we define a farm? I'm thinking of contexts like rural west Africa where often multiple families are living in compounds and allocating activities, inputs etc. across many plots, so the traditional conception of a single 'farm' seems a poor fit

A: A farm in the data can be defined in a lot of different ways, and it depends on the data set. Sometimes we define the farm at the level of the household's land holdings. In some data sets, we can define it in terms of the land holdings managed by a particular individual (or pair of individuals).

I guess basically the point is that a 'farm' is something that is defined by the data that we have. It's a construct, rather than something that has some obvious correlate in the real world.

Q: How does the poor population health feed into the scale debate in agriculture?

A: Probably lots of ways.... There's an old literature on 'efficiency wages,' where the idea is that wages reflect the strength and physical (and perhaps cognitive) ability of the workers. But you might imagine that you could separate the health of the workers from the scale of the farm... A big farm could just hire a lot more (low-health) workers. But as Mark is going to argue, hired labor is generally not a great substitute for family labor.

Q: In the US context, has there been any change in the definition of farms? Because the heterogeneity is quite high over the years

A: Yes, there have been changes, but the basic idea that Mark is presenting holds up. These days, the US Dept of Agric defines a farm (I believe) in terms of its 'value of sales in a normal year', at a very low level, because there is a political economy reason for them to claim large numbers of farms.

Q: Since the focus is on India, I don't think there's a great need to belabour the point, but I think worth noting the issue of household definition can be an important one in some contexts & our typical agricultural 'household' model may fail to capture some important aspects

A: You're right that the definition of a farm is always a key issue. Different household members may farm different plots, but there are often some inputs and farm operations that are done collectively or in coordination.

I'll just agree that theorizing the 'farm' is a really interesting and important topic, anywhere... Defining a farm in the first place is not straightforward. (When does a garden become a farm? When does a household count as a farm household?) All of these questions are really important! So great questions.

Q: Kindly define Frictions as referred here. Thanks

A: In this context, 'frictions' will probably mean anything that keeps markets from achieving efficient solutions. Transaction costs will be an important part of the frictions.

For instance, costs of figuring out whether workers are capable or not; travel costs for getting workers from the market to the farmer's field, etc...

Q: Given the pop density in India, the search cost is likely not going to be a big factor. Why then are Indian farms so small?

A: Mark will be getting to this in a little bit. So I'll leave it to him...

Q: The figure on share of households holding operational land is from which year? >95% for China was very surprising to me. Slide 8

A: I missed the specific statistic. I suspect that this is \*conditional on holding agricultural land\* rather than the unconditional percentage of all households.

Would you buy that?

Q: Ah I see. I read the graphic as saying: See how many households have agricultural land. You are saying: Among people who hold agricultural land, vast majority is small. Yes, this makes sense to me.

A: Yeah, I think it's basically a measure of farm size, for household-owned farms (as opposed to public-sector or large commercial farms).

A: 10 acres are indeed a very big (operational) farm size in China. Average farm size (for agricultural households) in 2019 is only about 0.5 ha, and 210 million out of 230 million agricultural households cultivate a farm size less than 0.67 ha (2019 Ministry of Agriculture and Rural Affairs). So..

A: 10 acres = 0.04 km<sup>2</sup>

Q: How much of the inverse relationship between yield and farm size do we think is driven by measurement error? How confident is the literature that the relationship is "real"?

A: Indeed, the inverse relationship btw land size and yields can potentially be fully explained by correlated non-classical measurement error on production and land. See <https://www.sciencedirect.com/science/article/pii/S030438781831263X> and literature cited there.

A: There is a literature on this, as you may have seen, much of it coming out of the LSMS team from the World Bank. Some great papers. It does seem that systematically, there is non-classical measurement error in both farmer-reported area and yield. Farmers with little land tend to overstate their output, relative to crop-cut measures. But it's not clear that this is the main source of the inverse relationship. What seems to be a bigger part of the story is that households with little land apply a lot of family labor to it, so that yields are very high... but not profits or value added per worker.

But I think Mark will get to this in a minute.

A: Besides measurement error, it could also be composition, right? Large farms use lower quality land. So conditional on land quality, big farms might still be much more productive than small farms. Policies that restrict farm size would then do a lot of harm.

A: This is also true, but even more true in rich countries... For instance, in the US, the biggest farms tend to be in dry areas, and many are ranches. But in much of the data that is described here, the farms are fairly similar.

Q: I didn't understand the focus on scale economies. Even with decreasing returns in production in agriculture, there could still be a large argument for moving resources/land from low productivity to high productivity farms, right? Maybe I am misinterpreting "scale economies" here.

A: The scale economies that Mark is arguing for are \*increasing\* returns. He is going to argue (I think) that labor market frictions (and perhaps land market frictions) are playing an important role in preventing the realization of scale economies.

A: Yes, this is how I understood it. My point was to say that even in the absence of these scale economies, you could explain dramatic changes of farm output and increase in farm size in, for example, the US with decreasing returns to scale in production. I thought the aim was to explain these patterns.

Q: I remember seeing a paper (maybe the one linked above) that investigated but I didn't know how settled the question is in general.

A: I think the focus on measurement error comes out of the introduction of both GPS measures of area and crop-cut measures of yield. There is a cluster of papers by some of the following people: Gero Carletto, Sidney Gourlay, Talip Kilic, and others, with co-authors. (And apologies for not doing justice to the many others who have done fantastic work on this topic.)

But as Mark will argue, these are comparisons between very small household farms, rather than larger farms. It's looking at inverse relationship between very small farms and slightly less small farms.

Mark has just made this point better :)

Q: What about the fact that agri. subsidies in the rich country might not be letting poor countries diversify and specialize to some optimal level? Should one not take a general equilibrium framework with open economies given the size of subsidies and global trade in agriculture?

A: This is a really interesting issue. The strange truth is that -- for all that OECD countries do undoubtedly subsidize their farm sectors -- the particular form of the subsidies in the last decade or two has changed (because of WTO pressure). Most of these subsidies (with some key exceptions) have relatively limited effects on the extent of diversification in low-income rural economies.

To a large extent, the deeply rural economies of South Asia and sub-Saharan Africa are relatively poorly integrated into the global agricultural economy. Between the two effects, it's probably true that these farms are not hugely impacted by the subsidies.

Q: Was a non-parametric regression used then, due to the non-linear relationship?

A: Sorry... I missed this one... The slide blew past me! :)

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Q: Can you please clarify why transaction costs of hiring labour results in falling average hourly wages with hours hired and thus with plot/farm size. autarchic farming

A: I probably missed this one, too. But I think if you thought that there was a fixed cost for a worker of accepting a job, then you would have to pay someone more per hour to work a very brief shift than to work a longer shift. You have to pay for their travel time, if you like... So that it's relatively costly to hire someone for a very brief amount of time.

A: I think you have it reversed. The fixed cost is on the side of the hirer, so it will pay low hours people less.

A: That's interesting – the first answer feels more intuitive to me. Like in the US, freelance consultants charge higher hourly wages than they would make in a fulltime position.

A: I think Mark is saying that the fixed cost (e.g., travel to the field) is what leads to this pattern. As he says, \*some fraction\* of that cost is borne by the employer. The employer faces a higher labor cost per hour, in the presence of the fixed cost. The worker \*receives\* a lower wage per hour.

A tax incidence issue. :)

Q: In India, at least in the Eastern part, families lease lands from the absentee landowners, is there no market like that in the area of the study? For such land it would be difficult to measure the number of hours worked.

A: You'll know AP better than I do... But I think that the data here collect detailed data \*not only\* on hired labor, but also on family-supplied labor. The data are extremely detailed on labor use.

Q: Could the estimated fixed costs partly capture decreasing returns to marginal labor hours?

A: I suspect that the steepness of the declining labor cost in relation to hours worked would suggest really startlingly sharp decreases in returns. You wouldn't expect to see decreasing returns between one hour and two (to give a probably extreme example).

Q: Would it be more meaningful to measure distance from home to farm as a time measure instead of kms/miles? Because that would control for the road quality.

A: I suspect that to a great extent people are on foot or bicycle... The time measure will also very likely correlate closely with the distance measure.

Q: Couldn't this difference be an artefact of the data collection? If I hire for a given task (weed my field for the day) someone who completes the task in 6 hours is going to show up as having a higher hourly wage than a lower productivity worker who takes nine hours who is classified as full time?

A: One way to get at this would be to see whether workers who hire their labor out to different people on different days might receive different amounts for different length shifts. In other words, you could see the wages earned by the same person on contracts of different lengths. I don't know if they have that in the data, but with decent controls, you might be able to get close to this.

Q: I didn't understand the argument for high search costs in these labor markets (Slide 39). Right below, information is given that laborers work on average for 7 different farmers. Isn't this an argument against high search costs? And why would labor contracts be daily if search costs are so high? It seems a super inefficient contract in a setting with high search costs.

A: This one's an excellent question for Mark. We'll try to flag this for Mark at the end.

A: Yes, this was my point: Fixed costs I am fine with. Search costs I am a little less convinced by. If workers worked for you in the past, you can just call them again. I don't see huge search costs here. Transaction costs, yes!

Q: I could also imagine that the marginal productivity of labor hours varies depending on whether the plot-owner works with laborers, or not due to better vs worse monitoring, and so lower and higher moral hazard. If landowners may be more likely to work less than 8 hours (they have other things to do around the farm etc.), then maybe this could be due to differential moral hazard? Do we know anything about this interaction?

A: There are a lot of interesting points here. One of the reasons that hired labor is used so relatively little in agriculture is that monitoring is hard. I always figure that this, in turn, reflects the spatial nature of agriculture. It's hard to supervise a worker who is on the far side of the farm. So in a funny way, the very small farm size should make labor supervision easier. I suspect that in almost all of these small farms, the hired workers are working alongside family members. I would conjecture that there are not many plot holders/managers who are not actually working alongside the hired labor.

Instead of hiring workers and not working alongside them, what you would do (as a landowner) is to share crop or move to a fixed-rent contract.

Q: Is it possible to know from the data, what precisely are these fixed transaction costs for labour? From a policy perspective, if one were to be interested in reducing these transaction costs, we need to shed light on the precise nature of the costs.

A: I'd perhaps put it this way. We know some of the fixed costs, and when we know them, we may be able to measure and quantify them -- and to identify policy solutions.

But there may also be some fixed costs that we aren't aware of... or that we can't easily measure even if we know about them.

You're right that this will matter for policy. The way I would think about this is that if we think fixed costs are important, we know to go looking for them!

Q: Some farmers may higher machines jointly. E.g., a harvester for several farmers during harvesting season.

A: Julieta Caunedo, whom you might remember from a couple lectures ago, has research precisely on this

A: There can be lots of different models for machine sharing. Farmers may team up to hire machines together, or rental markets may allow for farmers to hire machines for small amounts of time.

Another paper to look at is a cool recent paper that is not on farming, but on carpentry in Uganda: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3674922](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3674922)

Q: The counterfactual exercise from Mark necessitates organizational intervention-introducing probably a new type of organization, how can one do that? What does he have in mind?

A: I think he's going to talk about this now. The constraint in the consolidation of farms is both economic and political. He is arguing that there is both an economic and political constraint preventing consolidation. So I think the argument is going to be that you need major institutional innovation that is not easily achieved.

Follow up to this. How relevant might be the story that people live in the plots that they farm, so moving cost are a friction to selling plots. In the satellite image it appeared that people didn't live in their plots, but is this generally true for other developing nations?

And is there a way to extend Mark's model and make it dynamic so that we would eventually see the same consolidation pattern that occurred in the US (and how long it would take)? Adding in changing demand for nonag labor relative to ag?

Q: What happened in the US -in policy, legal or political sense- through the 1850-2000 in the US that allowed farm scale to increase?

A: Great question. From my perspective (I don't speak for Mark here) the vast increases in demand for off-farm labor meant that consolidation happened because lots of people wanted to leave agriculture... In a sense, people wanted to sell land to pursue more profitable opportunities in other sectors.

Q: There is always an elephant in the Indian room - Caste ! Don't you think caste factors could introduce frictions in hiring labour. How can that be included in the model?

A: Good question.... You might need to know whether the hiring is taking place \*within\* caste or across caste. I'm guessing this will vary across parts of India.

Q: Could a high-risk aversion of the farmers be preventing them from being exploratory in terms of the zeroing on how to come together aka organizational innovation to solve their problems?

A: There are certainly examples from other parts of the world of successful agricultural cooperatives, so I would probably disagree with Mark on the feasibility of this approach. Dairy farming -- almost everywhere in the world -- has a strong presence of cooperatives. So

I suspect there is something fairly specific to this context that is making cooperatives unattractive.

Q: Would contract farming and eliminating subsidies increase productivity with use of biotechnology to convert agriculture into energy needs.

A: I don't know, as this research is not about any of those issues. They are important though.

Q: The labour costs for different agricultural operations can be very different. And some operations like harvesting are likely to have more hired labour which might reflect in the transaction costs. So shouldn't these costs be calculated conditional on the operation?

A: The econometric estimates of the hourly wage discounts by hours worked are net of operation fixed effects, so they are conditional on operation. But in any case, the fixed costs per worker does not depend on the number of workers, as our calibration shows (no team hiring, evidently). Total monies spent on these transaction costs would be higher at harvest if more workers are hired, but not fixed costs per worker.

Q: Wouldn't there be no effect for those below  $a^*$ ?

A: Yes, the effect of rainfall on low-hours hired work would be zero below  $a^*$ .  $a^*$  varies by operation, so even low-area farms will be above  $a^*$  and  $a^{**}$  for some operations. And the estimates are for averages by area.

Q: How relevant might be the story that people live in the plots that they farm, so moving cost are a friction to selling plots. In the satellite image it appeared that people didn't live in their plots, but is this generally true for other developing nations? And is there a way to extend Mark's model and make it dynamic so that we would eventually see the same consolidation pattern that occurred in the US (and how long it would take)? Adding in changing demand for nonag labor relative to ag?

A: Yes, making the model dynamic and looking at how changes in worker demand in the industrial sector induce the structural transformation would be useful. Then the issue of moving costs becomes very relevant. Industrialization seems to be the only way to make agriculture more productive, by reducing the number of farmers. This was also the conclusion of the Zamindari Commission in 1948! There are barriers to permanent moves in India. See Munshi and Rosenzweig, AER "Networks and Misallocation" 2016.