

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

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Lecture 7: Agricultural productivity gap: measurement and explanations

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[Presentation Slides](#)

[Video](#)

Q: If the household labor is not substitutable across agricultural and non-agricultural sectors, what would the model predict as the productivity gap?

A: If labor is not mobile across sectors, or if people have different skill levels depending on the sector where they work, then gaps could be quite different. If skills are very different, you could also end up with sorting by skill type across sector, which might lead to outcomes very different from equalization of marginal (or average) product. I think David will talk more about this in a bit.

Q: Is p_a the relative price?

A: Yes.

Q: Why is capital asset value included to the value added (of agriculture) ?

A: I think what was showed on the slide is that value added is the sum of self-employment income from agriculture plus households' wage income and their capital income. So the capital income would be the returns from ownership of agricultural equipment that is rented out, for example; there isn't much of that in these data...

Q: The "unambiguous" measurement of VA should underestimate value added. Would underestimation be bigger in the agricultural than in the non-agricultural sector?

A: Really interesting to think about underestimation. One issue is that the value added from micro data miss out on the commercial agriculture sector, where it's present. Household surveys are not designed to capture large commercial farms; the samples are population based, and relatively few people own big commercial farms. So we may be underestimating value added in agriculture in countries where the commercial sector is important. But of course we miss that in the non-agriculture sector, too, and it may be even more important

there.

These household survey data are not really designed to measure GDP or sectoral value added. People sometimes try to use these data to make the case that the national accounts are wrong... But they are really measuring very different things.

Q: How to deal with part-time employed labor? In agriculture, when we estimate labor productivity, as much of them of are seasonally employed, productivity estimates are in sense underestimated. This shall result in an APG positively biased towards toward higher non-agricultural GDP.

A: In these survey data, there are measures of hours worked, and that allows us to look at output or value added per hour. And some of the surveys are collected around the year -- unlike census data that record data on a single day. So these are issues that can be addressed in certain data sets.

Q: Relating this with Rachel Ngai presentation (home production) I guess that if you also take into account the VA of informal non-agricultural that might (potentially) be similar to the macro measure? I guess not only agriculture is home produced in these countries. Any thoughts on that?

A: For sure, agriculture is not the only good that is home produced or informally produced in most countries. You're right that you should always be asking whether these issues (part-time labor, imperfect measurement, etc.) apply to agriculture disproportionately... or whether they apply to the informal non-agricultural sector too.

Q: What's your intuition about this? Might agriculture be more affected?

A: Actually, I suspect that the national accounts data do a better job of measuring agricultural value added than they do of measuring informal services... So my hunch is that the APG is not driven by measurement issues in agriculture and is not overstated because of these measurement issues.

Q: Is there a role for food security here? i.e. I am willing to accept a lower wage in agriculture if it means I know I will have enough food should there be a negative shock.

A: I think you are right, and I have a student working on this precise question.

A: You could think of this more generally as a question about whether there are non-monetary amenities or other utility payoffs for people remaining in rural areas and working in agriculture. That is entirely possible, but we ought to be able to specify what they are.

It turns out that if you try to understand what kind of risk aversion you would need to account for the difference in wage levels... it seems that people would need to be astonishingly risk averse to choose to stay in agriculture... But you're right that if the bad outcome is really catastrophic (i.e., starvation), you might want to stay in agriculture.

Having said that, there is a pretty consistent pattern that food security for people in urban

areas is often relatively high because of the political power and influence that they may have. In modern times, urban people are able to access food through a variety of entitlements (to use Amartya Sen's language). So it's not clear that someone really risk averse would want to stay in the rural area.

A: Really interesting. There might be an interaction here with the insurance and migration discussion. If I optimize as a household, then I don't need to worry so much about food security in the city, if I can migrate back to the rural area when I lose my job.

A: Not sure if this is the same as your question, but in the original Bryan et al 2014 they find they need to assume unrealistic levels of risk aversion to explain the magnitude of their effects via risk aversion alone.

Q: Really interesting. There might be an interaction here with the insurance and migration discussion. If I optimize as a household, then I don't need to worry so much about food security in the city, if I can migrate back to the rural area when I lose my job.

A: The migration literature would be very clear that we should think about migration decisions as household choices as well as individual choices... with some interesting tensions between the individual incentives and the household's incentives. For instance, a highly productive individual might prefer to migrate, but the household might want to keep her home... Migrants may also lie to their families at home about the income that they earn, as Travis Baseler suggests in a nice recent paper.

Q: I'm interested for India. It has huge household survey data on employment but fails to record hours they work. Are there any indirect estimation procedures that shall help?

A: There are some very good data sets -- not nationally representative -- that would have better info on hours worked. For instance, I think that the ICRISAT village data would have richer information on hours. I think the cost-of-cultivation data would also have hours worked data, although these are not always easily available. I don't know about the NSS data... Do those have hours worked??

Q: Does size of farm land can affect productivity gap across developing countries?

A: Mark Rosenzweig's lecture from a couple of weeks ago made the case that very small farm size actually leads to low productivity. So yes, I think that's a possibility. Diego Restuccia's work with various co-authors would also make this case, through a different mechanism. In Diego's work, the problem is not just small farm size; it's that when you have such large fractions of the population managing farms, the average level of farmer skill will be driven lower because there are too many bad farmers. Diego would see this as an issue of misallocation; too many small farms imply too many bad farmers.

Q: NSS data doesn't record hours worked. Cost-have cultivation data has the hours worked but its records are crop-specific. May be little difficult if we want to aggregate for agriculture sector as a whole. And it covers information only crops but not livestock.

A: The cost-of-cultivation data are presumably developed from some underlying survey data... but I've never been able to get access. But there are definitely some smaller-scale surveys at sub-national level that may be the best you can do. I'm not expert on the Indian data sources, but I know that it is hard to find the hours worked data across the entire year. It's an important issue... Even where you have hours worked, but the data come only from one census day in the year, seasonality may lead to important measurement errors.

Q: Could the low differences in returns from migration be related to low negotiation power of the workers moving from agriculture to cities?

A: That's an interesting question. I don't know of papers that specifically ask this. Are you assuming that workers who are already in cities (non-migrants) have some greater level of negotiation power? That would be interesting to know.

Q: Can you indicate about the average land size?

A: Of course land size is very small in the countries we're talking about. In most low-income countries, the median farm size is probably no bigger than 1-2 ha, and possibly smaller.

Q: I assume that those that live in the city are more informed about wages and their rights also they might have housing.

A: I'm sure you're right. We would generally expect migrants to have less information and to be more precarious in their employment in cities.

Q: True. Plot level cost of cultivation data are open for public access. Yes, again, this doesn't inform the date when survey was carried out. But I'm sure it's not collected in a single day as much of the crops across states are sown and harvested on very different dates. Yes, it's possible by farm, from crops.

A: The question is whether there is any way to re-aggregate the c-o-c data by farm, which is what you'd like to see.

A: If anyone is interested in this paper "Selective migration and agricultural productivity gap : Evidence from china" I don't think it is online but there is a presentation here: <https://www.youtube.com/watch?v=78akr0TYXYk>

Q: What's the title of Chen et al (2009) in page 28?

A: I think it should actually be this one: <https://doi.org/10.1111/j.1728-4457.2007.00193.x> although there are many versions of the paper kicking around.

A: "Agricultural Risk, Intermediate Inputs, and Cross-Country Productivity Differences" by Kevin Donovan is a relevant paper

Q: The probability of getting a job and migration reminds me of the Grapes of Wrath

A: Some experiences are common across time and space...