Structural Transformation and Economic Growth (STEG)

STEG CEPR

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Lecture 5: Firm-level misallocation: benchmark model and early results

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Presentation Slides

Video

Q: The Melitz model takes all plants producing one variety as identical?

A: The plants are producing varieties which are not identical, but they are 'symmetric'. In other words, they are imperfectly substitutable for each other, but because the costs h_bar is the same for each plant, they will optimally be the same size.

It's possible to write down versions of the Melitz model with plants that differ in costs or productivity in various ways, but in this simplest case, they are symmetric.

Q: To clarify, do we say that no two plants produce the same variety then? Or can there be heterogeneity between plants producing the same variety as well?

A: Because of the fixed cost, there wouldn't be any reason for two different plants to produce exactly the same variety. They will always want to distinguish their varieties from the existing ones. Or put differently, it wouldn't be efficient to pay the fixed cost twice to produce a given variety; you would just produce more from the existing plant.

Q: Last lecture we saw evidence of increasing returns to scale in agriculture, how do we relate this to the DRS assumption?

A: Interesting question. In these models, you'll see that we can end up with firm size distributions in which it will *look* as though there are increasing returns, even though the underlying production function may be CRS or even DRS. The Lucas model has this feature... Large firms may be more productive than small firms, even though the actual production technology is CRS.

So I guess the point is that the data may not always tell us exactly what the production technology looks like... It's complicated!

A: These models will have a fixed cost combined with DRS, so U-shaped average cost curves with an optimal efficient scale. It is different than Rosenzweig's model, but they were both after something similar.

Q: Is the ex-ante / ex-post difference relevant for quantitative/empirical work?

A: Yes, very much so. The question of how you interpret observed productivity differences in the data depends on whether you think the heterogeneity comes from ex ante or ex post differences.

A: Ex ante heterogeneity leads typically to diminishing returns to entry (the best guys enter first), whereas ex post heterogeneity leads to flat returns to entry (entrant draws are the same no matter how many enter). It can also matter for things like self-financing behavior for firms facing financial frictions because potential poor entrants who know they are productive would save more.

Q: My question is what happens, in any a free-market economy with no central social planner, rather the motivation to open the plant by individuals/entrepreneurs is driven by the prevailing market conditions.

A: That's a great question. These are very simple models of economies that are so simple that they are entirely efficient. In economies like this, the competitive equilibrium is efficient (First Welfare Theorem), so that it gives the same solution as the social planner's problem. But that means we can 'solve' the Social Planner's problem to find what the equilibrium of the economy will look like, and we can invoke the 2nd Welfare Theorem to conclude that this would also be the competitive equilibrium. In a more complicated world, the free market is not always going to be efficient... And that's exactly what we use the models for. When we introduce market inefficiencies, we will move away from the social planner's optimum.

That's where this lecture and the next will go.

Q: He mentions that TFP involves other non-technical factors like best practices. Is it plausible to then model TFP as institutional quality?

A: TFP as measured is just a residual, which could include many things. "Modeling" institutional quality can take many different forms. On one extreme, one can model financial institutions that lead to distortions, misallocation, etc. On another extreme, some of the things that Acemoglu, Johnson, Robinson consider, for example, might be more challenging to model.

A: I was thinking more about Acimoglu et al's version. But thank you, the answer helps.

A: If one could think of a good way of modeling an aspect, that would be a nice contribution to the literature.

Q: In Lucas, how are the profits redistributed between households and manages?

A: They are the same people... Every person is either a manager or a worker, and the managers get the profits of their own firms, and the workers get the equilibrium wage. But everyone has two identities -- as a worker or manager, on the one hand, and as a consuming household on the other hand.

Q: It's not clear why the size distribution is degenerate in Hopenhayn

A: In the model without heterogeneity, all the plants are the same size. Once the heterogeneity is introduced, the size distribution is not degenerate.

Q: Why is inelastic labor a necessary condition for competitive equilibrium to be efficient?

A: It's not a necessary condition for CE to be efficient. But it makes solving these problems very easy.

A: In the Melitz model, the markups will distort labor supply if it is elastic. If labor supply is elastic, and markups are constant across all plants, than there will be no distortion for markups.

Q: Can the decentralized free market equilibrium lead to misallocation independently of government/other proactive centralized interventions?

A: Depends what you mean by the 'free market'... Certainly if the 'free market' has externalities or frictions of various kinds, the decentralized competitive equilibrium can generate misallocation.

Lots of the misallocation-in-development literature focuses on failures that are not government-induced; e.g., frictions that distort land market transactions or labor market transactions. In a way, Mark Rosenzweig's lecture yesterday was pointing to a potential example of misallocation that did not arise from government intervention.

A: Lots of other sources of potential misallocation in a free market… variable markups from a lack of perfect competition, labor and capital market imperfections, etc.

A: So worth distinguishing between 'free market' and 'perfectly competitive and undistorted' market.

Q: Is there any work on how much misallocation is within vs. across sectors?

A: A great question! (Partly because it's something that is currently at the heart of my own research.) Yes, this is a lively question. You should definitely have a look at the work of Diego Restuccia, whose a co-author of Richard's. Some of David Lagakos's work... Or send me an e-mail, and I can add other suggestions.

Q: Regarding the direct approach, what are examples of main sources of misallocation? Here we have taxes/subsidies.

A: The taxes and subsidies are very stylized and would refer to any kind of distortion or friction that 'looks like' a tax. For instance, you could think of an iceberg transport cost as looking like a tax -- when you move goods from one place to another, you lose a fraction of what you started with... So Richard is using the idea of a 'tax' as a kind of metaphor, if you like, for anything that has the same impact as a tax.

Sometimes in this literature, people use the word 'barrier' or 'friction' to be agnostic about the source of the 'tax'.

Q: So, (from yesterday) labor market frictions could also be a source of misallocation, right?

A: Yes, absolutely. Lots of the papers in this literature are looking for other sources of distortions. My previous answer should also have included the word 'wedges' that Richard is using now. One issue is the interpretation of whether these are easily fixed (as would be the case from a policy distortion) or take resources to eliminate, as in the case of building roads.

Q: How robust would this exercise be to the fact that labor productivity is heterogenous? Are we assuming that all labor is the same in the data?

A: On the theory side, we could deal with heterogeneity in labor productivity; it's just another complexity to handle. In the empirical work, the problem is that heterogeneity in input quality can be hard to distinguish from firm-level productivity. So you could imagine that a firm has low productivity when in fact it has average productivity but is using low-quality inputs. This is a tricky issue empirically.!

Q: What is the role of endowments in productivity differentials? in open economy models that would translate to the Rybcznski theorem of trade?

A: I'm not sure exactly how the question is relating to today's lecture. If by endowments, we think about land and raw materials endowments (oil, minerals), these have not been typically modeled in the misallocation literature (production functions have labor and capital). Connecting with the last module, land tends to be more important in poorer economies because they are agrarian. Mining also tends to be relatively more important in poorer economies, which would mean that endowments directly are not that important in understanding the huge differences that we see across countries. There are models of Dutch disease and political economy, where it can play larger roles.

Q: How reasonable is the assumption of same "alpha" in production function when we go to the data? How will this bias the measured TFP?

A: Hsieh and Klenow allow this to vary across industries, but technologies may vary across plants, and more generally this misspecification of technology may exaggerate misallocation. Pete may touch on this next week.

A: Arguably it's not a very reasonable assumption at all -- but it's one that we make frequently... One of many challenges of implementing this framework empirically.

Q: If there is informal / formal divide in each sector, will it be picked up under "misallocation" estimate?

A: Depends whether the two sectors differ in productivity or in the technologies or types of resources that they have access to.

Q: Could you kindly cite the source on dynamics of wedges in India? Thanks a lot!

A: I think that was from Hsieh-Klenow.