Comments on "Understanding Migration Responses to Local Shocks" by Borusyak, Dix-Carneiro, and Kovak

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Contributions

Very nice paper, clearly written. Clearly will change the way the profession thinks about regressions of population on shocks

1. Regressing log population changes on shocks does not identify the population elasticity to that shock
   - Omitted Variables Bias—shocks to nearby areas
   - Particularly pernicioius if the shocks are industry-based
2. In a model, this can be fixed

Summary

In a static logit model, there isn't a huge problem:

- ℓ is location:

$$u_i = \max_\ell u_\ell + \frac{1}{\theta}\epsilon_{i\ell}$$

  where $\epsilon_{i\ell}$ is i.i.d. Gumbel

- Population shares given by:

$$L_\ell = \frac{e^{\theta u_\ell}}{\sum_j e^{\theta u_j}}$$

  So

$$\log L_\ell = \theta u_\ell + \text{constant}$$

- Any good-as-random shock to u_ℓ is fine

Summary

What goes wrong?

- In a more typical model, some locations are more substitutable than others

$$L_\ell = \sum_k L_{k,t-1} \frac{e^{\theta u_\ell - \tau_{k\ell}}}{\sum_j e^{\theta u_j - \tau_{kj}}}$$

So

$$\log L_\ell = \theta u_\ell + \underbrace{\log \sum_k L_{k,t-1} \frac{e^{-\tau_{k\ell}}}{\sum_j e^{\theta u_j - \tau_{kj}}}}_{\text{Definitely not a constant}}$$

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- In general, that second term is correlated to any shock to u_ℓ
- If you understand the model, can fix this problem
  - In their simple model, you would do reasonably well if you focused on migration elasticities instead of population elasticities, and if you subtract off the migration-weighted-average shock
    - I almost did this in my JMP (Howard, 2020)!
  - Even better to use NLLS

Major Comment: What if we don't understand the model?

- Migration elasticities may not be constant
  - A different weighted-average might be more appropriate
- Lots of spillovers from shocks
  - Intermediate inputs
  - Demand
  - Commuting
  - Unlikely to run into a situation where we know the size of these spillovers but not the population elasticity
- Lots of spillovers from migration itself (Howard, 2020).
  - Will amplify migration, but not typically how we think about θ

Minor Comment: Long-run Elasticities May Be Better Measured

In the very very long run in a dynamic logit model, population shares are well-approximated by a static logit model

- In other words, the weighted average converges to the same weights in the very long run, and a fixed effect would be sufficient
- We should probably be more concerned about a paper that analyzes a few years (which to be fair, is the most common), rather than a paper looking at very long differences
- Would be interesting to see such an application in their model

Conclusion

- Great paper! Formalizes some intuition on OVB in population regressions
- Proposes some solutions
- Critical for us to understand how general these solutions are
  - I am personally much less optimistic than the authors that OVB can be fixed
  - Nonetheless, applaud their efforts
- Perhaps this is a bigger issue in the short-run than the long-run