DISCUSSION: PRODUCTIVITY, PLACE, AND PLANTS: REVISITING THE MEASUREMENT BY: SCHOEFER AND ZIV

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TEACHING STATISTICS: A BAG OF TRICKS



Highest kidney cancer death rates

Fig. 2.3 The counties of the United States with the highest 10% age-standardized death rates for cancer of kidney/ureter for U.S. white males, 1980–1989. Hand this map out to the students and ask why most of the shaded counties are in the center-west of the country. See Section 2.2 for discussion.

• Why?

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Lowest kidney cancer death rates



Fig. 2.4 The counties of the United States with the *lowest* 10% age-standardized death rates for cancer of kidney/ureter for U.S. white males, 1980–1989. Surprisingly, the pattern is somewhat similar to the map of the highest rates, shown in Fig. 2.3. Hand this map out to the students only after they have discussed the previous map.

• Why?

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Lowest kidney cancer death rates



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- Why?
- Granularity bias.

SUMMARY

- Plant productivity $a_{p\ell} = \tau_{\ell} + u_{p\ell}, E[u_{p\ell}] = E[u_{p\ell}u_{p'\ell}] = 0.$
- In small samples, $\bar{u}_{\ell} = N_{\ell}^{-1} \sum u_{p\ell} \neq 0 \Rightarrow \hat{\tau}_{\ell} = N_{\ell}^{-1} \sum a_{p\ell} \neq \tau_{\ell}.$
- $Var(\hat{\tau}_{\ell}) > Var(\tau_{\ell}).$
- "Dartboard" permutation test of $Var(\hat{\tau}_{\ell}) = Var(\bar{u}_{\ell})$.

• Split-sample bias correction.

PERMUTATION TEST



SPLIT-SAMPLE IV

(a) Location Effects





Interpretation: True variance is $0.216 \times variance$ of half sample MSA effects, or about 40% of variance of full sample MSA effects.

WHAT DETERMINES LOCAL TFP DIFFERENCES?

- Exogenous: something in the soil.
- Indogenous agglomeration:
 - Knowledge spillovers.
 - Local supplier networks.
 - Thick labor markets.
- Orrelated measurement error:
 - Labor quality sorting.
 - Unobserved inputs such as public infrastructure.
 - Endogenous utilization of factors due to local demand.
 - Local price level.



WHEN DOES SCHOEFER-ZIV CRITIQUE APPLY?

- Any IV will do.
- Immune if *explaining* place effects (left hand side measurement error).
- Structural exercises (e.g. using observed wages) recover TFP, not τ_{ℓ} .
- Spatial equilibrium a la Rosen-Roback depends on TFP, not τ_{ℓ} (as long as idiosyncratic *u*s are not measurement error).
- Counterfactuals and policy evaluation may depend on au_ℓ , not TFP.
- Does not address correlated measurement error in TFP.

SUGGESTIONS

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O exercise for growth rates as well as for levels.

Name names: quantitatively re-evaluate existing literature in light of findings.

Appendix slides