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

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Why?
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?
TEACHING STATISTICS: A BAG OF TRICKS

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?
- Granularity bias.
Plant productivity $a_{pl} = \tau_{pl} + u_{pl}$, $E[u_{pl}] = E[u_{pl}u'_{pl}] = 0$.

In small samples, $\bar{u}_{pl} = N_{pl}^{-1}\sum u_{pl} \neq 0 \Rightarrow \hat{\tau}_{pl} = N_{pl}^{-1}\sum a_{pl} \neq \tau_{pl}$.

$Var(\hat{\tau}_{pl}) > Var(\tau_{pl})$.

“Dartboard” permutation test of $Var(\hat{\tau}_{pl}) = Var(\bar{u}_{pl})$.

Split-sample bias correction.
**Permutation Test**

(a) Location Effects

Empirical $\text{Var}(\hat{\xi}) = 0.024$

Permutations:
Mean $\text{Var}(\hat{\xi}) = 0.016$
Position of empirical $\text{Var}(\hat{\xi})$ in distribution of permutations:
>1000/1000

(b) Location-Industry Effects

Empirical $\text{Var}(\hat{\tau}_{i,l}) = 0.048$

Permutations:
Mean $\text{Var}(\hat{\tau}_{i,l}) = 0.043$
Position of empirical $\text{Var}(\hat{\tau}_{i,l})$ in distribution of permutations:
>963/1000
**Split-Sample IV**

(a) Location Effects

- **Naive Benchmark in Raw Data:**
  - Perfect place effects: \( \gamma = 1 \)

- **Empirical Relationship:**
  - \( \gamma = .216 \) (SE .039)

- **No place effect**
  - \( \gamma = 0 \)

(b) Location-Industry Effects

- **Naive Benchmark in Raw Data:**
  - Perfect place effect: \( \gamma = 1 \)

- **Empirical Relationship:**
  - \( \gamma = .126 \) (SE .014)

- **No place effect**
  - \( \gamma = 0 \)

**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?

1. Exogenous: something in the soil.

2. Endogenous agglomeration:
   - Knowledge spillovers.
   - Local supplier networks.
   - Thick labor markets.

3. Correlated measurement error:
   - Labor quality sorting.
   - Unobserved inputs such as public infrastructure.
   - Endogenous utilization of factors due to local demand.
   - Local price level.

4. Idiosyncratic plant differences and granularity.
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 $\tau_\ell$.

- Spatial equilibrium a la Rosen-Roback depends on TFP, not $\tau_\ell$ (as long as idiosyncratic $u$s are not measurement error).

- Counterfactuals and policy evaluation may depend on $\tau_\ell$, not TFP.

- Does not address correlated measurement error in TFP.
SUGGESTIONS

1. Are highest and lowest place effect MSAs small/few plants?

2. Do exercise for growth rates as well as for levels.

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