

Do We Really Know the WTO Cures Cancer?

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Motivation

- ▶ “How do institutions affect member state behavior?”
 - ▶ Non-randomness → can't infer effect from observed behavior.
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 - ▶ (Downs et al... many, many others.)
- ▶ Buffet of empirical solutions.
 - ▶ Fixed effects, matching, instruments, etc.
- ▶ This paper:
 1. Do the solutions work?
 2. How sensitive are sensitivity tests?

Generic Data Gen. Process

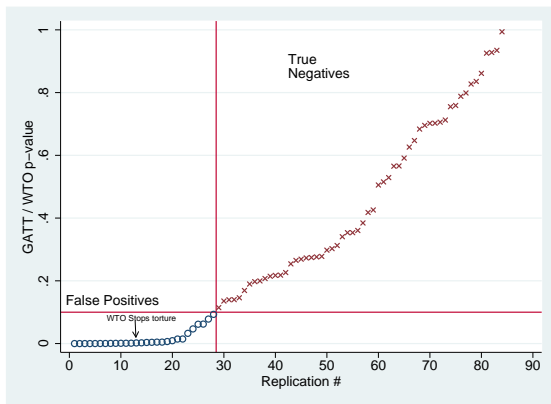
- ▶ Compliance equation:
 - ▶ $c_{it} = f(X'_{it}\beta + \alpha R_{it} + u_{it}^c)$
- ▶ Ratification equation:
 - ▶ $R_{it} = f(X'_{it}\beta + u_{it}^r)$
- ▶ Generally, positive correlation between u_{it}^r and u_{it}^c .
- ▶ Estimates of α biased upwards.
- ▶ Do different ways of estimating α give us false positives?

False Positives

- ▶ Experiment: Does WTO membership “explain” theoretically irrelevant dependent variables?
1. Collect all [53] studies with country-year unit of observation.
 - ▶ From *APSR*, *AJPS*, *IO**, last five years.
 2. Randomly* sampled [16] studies.
 - ▶ Kept least plausible DVs: e.g. torture.
 - ▶ Eliminated most plausible DVs: e.g. trade.
 3. Re-estimated authors' preferred specifications... adding a WTO membership dummy.

Cures Cancer

Figure : P-values for Effect of WTO on Irrelevant DV's



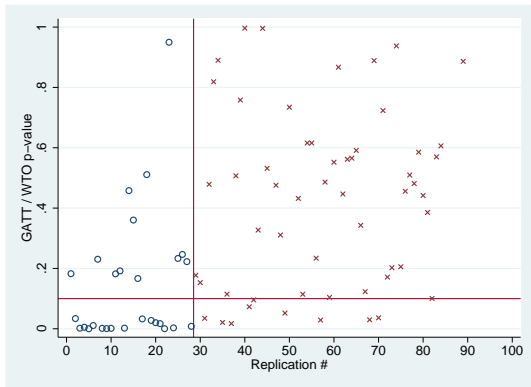
- ▶ 31 percent false positives.

Do Fixes Fix?

- ▶ Repeat experiment using:
 - ▶ Country FE
 - ▶ Propensity score matching
- ▶ Assess whether each lowers (or raises) the false positive rate.

Still Cures Cancer: FE

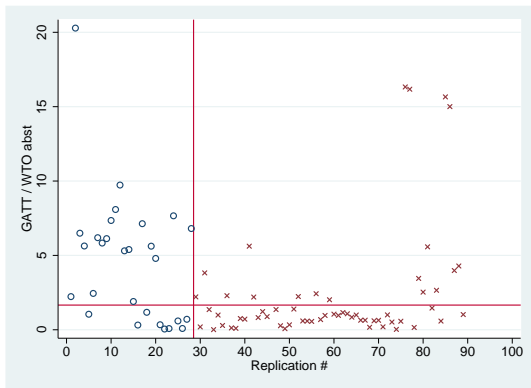
Figure : P-values for Effect of WTO on Irrelevant DV's, Fixed Effects



- ▶ 28 percent false positives.
- ▶ 9 new false positives, 12 new true negatives.

Still Cures Cancer: Matching

Figure : T-scores for Effect of WTO on Irrelevant DV's, Matching



- ▶ 42 percent false positives.
- ▶ 18 new false positives, 9 new true negatives.

Takeaway and Simulations

- ▶ Neither fix fixes.
 - ▶ Didn't consider instruments.
- ▶ But enough doom and gloom...
- ▶ Under what conditions do fixes fix?
 - ▶ Monte Carlo simulations.

Generic Data Gen. Process

- ▶ Ratification equation:

- ▶ $R_{it} = f(X'_{it}\beta + u^r_{it})$

- ▶ Compliance equation:

- ▶ $c_{it} = f(X'_{it}\beta + \alpha R_{it} + u^c_{it})$

- ▶ Composite disturbances:

- ▶ $u^r_{it} = \mu^r_i + \delta^r_t + \gamma^r_i t + e^r_{it}$

- ▶ $u^c_{it} = \mu^c_i + \delta^c_t + \gamma^c_i t + e^c_{it}$

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 - ▶ "Certain countries ratify and trade more."
 - ▶ Year-specific
 - ▶ "Shipping costs decrease over time."
 - ▶ Country-specific time trend
 - ▶ "Early ratifiers also have more steeply sloped trajectories of trade."

Simulations

1. Manipulate the covariance between each type of unobservable
 - ▶ E.g. $\rho_1 = \text{cov}(\mu^r, \mu^c)$
2. Set $\alpha = 0$
3. See whether estimators recover true α or generate a false positive.

Simulation Results

- ▶ What we think we know (or already knew and can confirm):
 - ▶ Fixed effects does a good job with country-specific, time-invariant unobservables.
 - ▶ Matching does a bad job with any selection on unobservables, and a good job otherwise.
- ▶ Country trending really mucks things up
 - ▶ Comparing early observations with later ones exacerbates the problem with trending.

Sensitivity

- ▶ Estimate α assuming that “selection on unobservables is the same as selection on observables.”
 - ▶ Altonji et al
- ▶ A very conservative assumption: the unobservables which affect treaty ratification and compliance are just as strong as the observables.
- ▶ Results in lower false positive rates: $\sim 7\%$.

Conclusions

- ▶ We should be leery of false positives.
- ▶ We should be try and match our fixes to the “shape” of the unobservables.
 - ▶ Country trends seem to work best (preliminary).
- ▶ Sensitivity isn't just for poets and musicians.