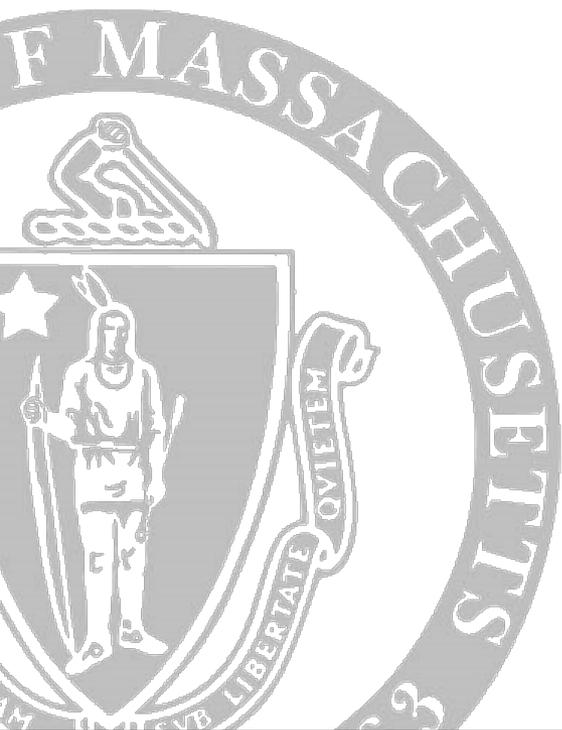


Identification of minimum wage effects: The role of CWED-related research



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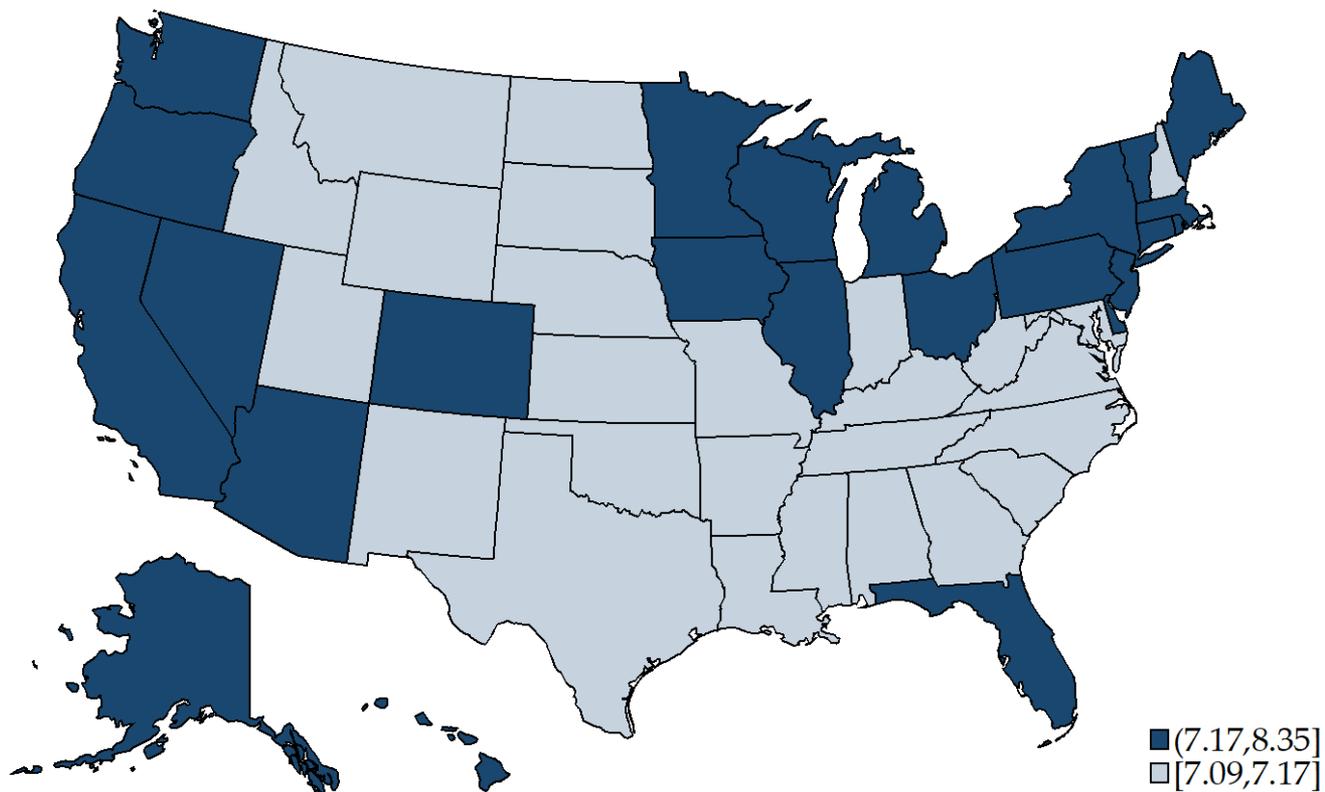
CWED research highlights

- Breaking new grounds on methodological fronts
 - Role of credible control groups
- Pushback on findings
- Future directions in minimum wage research

Challenges in identifying causal effects

- Time series evidence unreliable, fragile
- Starting in early 1990s, use of variation across states (e.g., Neumark and Wascher 1992)
- Problem: states raising minimum wages systematically different
 - Assumption of “parallel trends” across not tenable
 - Minimum wage “effects” often occur prior to policy implementation

High vs. low minimum wage states from 1979 to 2014



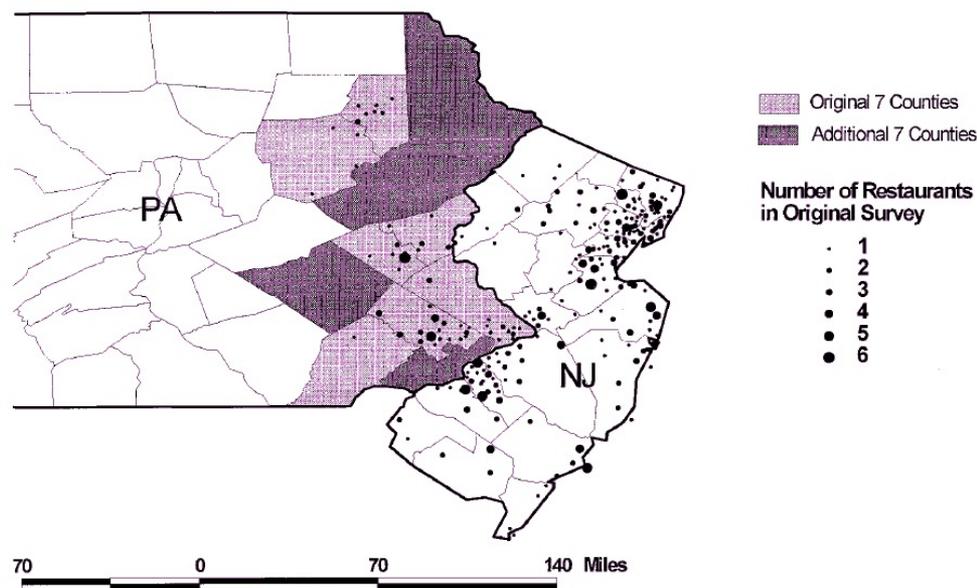
States raising minimum wages are different

1. Politics
2. Unionization
3. Sectoral mix
4. Cyclical factors

Problematic to assuming all states not raising minimum wage are good “counterfactuals”

Leveraging proximity: Card and Krueger (1990, 2000)

- Card and Krueger (1994, *American Economic Review*) studied NJ and PA fast food restaurants
 - NJ raised minimum wage, PA did not
 - Self-collected survey
 - Small positive/no effect on jobs
- Reanalysis (2000, *AER*) using representative payroll records from UI filings
 - **No effect** on jobs



Source:
Card and Krueger (2000)

Where we were in mid 2000's...

“it is important to remember that whatever happened in Texas and New Jersey are just two data points, and (again, in principle) ES-202 [QCEW] data could be exploited to pool several such state-based experiments.”

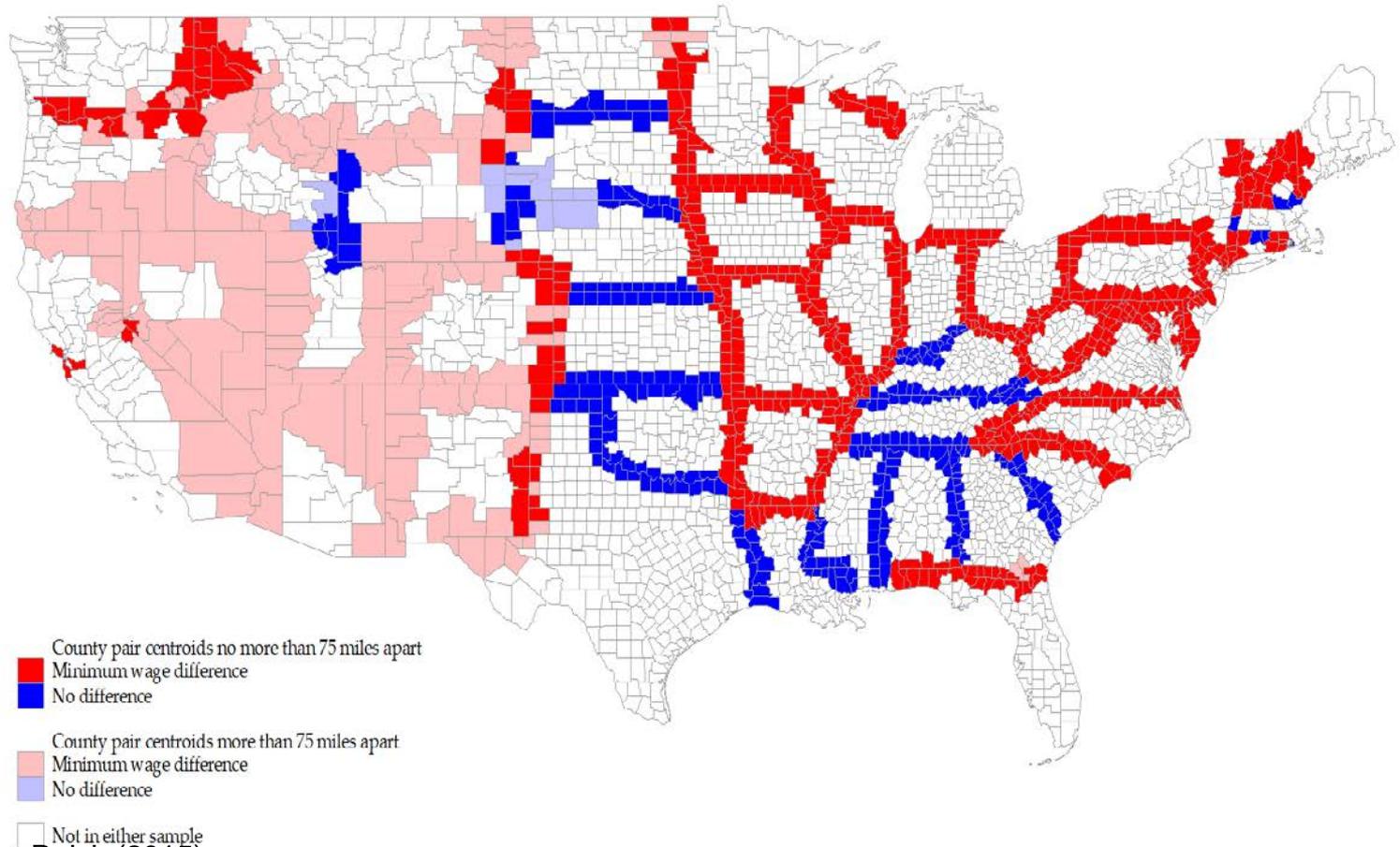
- Charles Brown (1999), *Handbook of Labor Economics*

Role of CWED in generalizing the case study approach

A key innovation: border-county-pair design

- Dube Lester and Reich (2010, *Review of Economics and Statistics*)
 - All pairs of contiguous counties straddling state borders (“border discontinuity”)
 - UI-based payroll data on restaurant employment from 1990-2006
- Dube Lester and Reich (2016, *Journal of Labor Economics*)
 - Additionally study young workers
 - Additionally look at hires and separations (turnover)

Research design: comparing contiguous border counties



Source: Dube, Lester Reich (2015)

Highly studied Groups

- Teens:
 - 25% of near minimum wage workers are teens
 - 30% of teen workers are near minimum wage, easy to detect effects
- Restaurant workers:
 - 24% of near minimum workers in restaurants
 - 23% of restaurant workers are near min. wage

Source: CPS-MORG data from 2000-2011, as cited in Dube, Lester Reich (2016)

Restaurant refers to NAICS 722 (food services and drinking places)

Impact of a 10% increase in the minimum wage:

Restaurant Sector

- Average earnings  2.0%*
- Employment  0.1%
- Turnover rate  2.1%*

Teens

- Average earnings  2.2%*
- Employment  0.6%
- Turnover rate  2.0%*

Sources. 1) Restaurant emp, earnings: Dube, Lester and Reich (2010)

2) Teen and restaurant turnover: Dube, Lester Reich (2016) 3) Teen emp, earnings: Dube, Lester and Reich (2016)

Impact of the research

- Dube Lester and Reich (2010): highest cited paper in past 10 years on “minimum wage” and “employment” (*Web of Science*)
- Allegretto Dube Reich (2011): 4th highest cited paper in past 10 years on “minimum wage” and “employment” (*Web of Science*)
 - Shows that use of regional controls, and state-trend controls delivers a similar results as the border design
 - Importance of spatial heterogeneity

Reactions

- “one of the best and most convincing minimum wage papers in recent years”
 - Lawrence Katz
 - Quote from 2010 UC Berkeley Press Release, referencing DLR 2010
- “probably the most plausible set of minimum wage estimates currently available for the United States”
 - Nicole Fortin, David A. Green, Thomas Lemieux, Kevin Milligan, W. Craig Riddell
 - “Canadian Inequality: Recent Developments and Policy Options” (2012) referencing DLR 2010
- “some of the most innovative recent studies”
 - David Card and Alan Krueger
 - 2016 preface to *Myth and Measurement* referencing DLR 2010, 2016

State of the Union Address, 2013



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**NATIONWIDE RESEARCH
SHOWS THAT
MODERATE RAISES IN THE
MINIMUM WAGE HELP
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ARINDRAJIT DUBE, T. WILLIAM LESTER, AND MICHAEL REICH,
"MINIMUM WAGE EFFECTS ACROSS STATE BORDERS: ESTIMATES
USING CONTIGUOUS COUNTIES," REVIEW OF ECONOMICS
AND STATISTICS, 2010

#JOBSNOW

Source: White House Enhanced State of the Union, February 12, 2013

Not all reactions were positive

“ [Dube, Lester and Reich] discard a great deal of valid identifying information—throwing out the identifying baby along with, or worse yet instead of, the contaminated bathwater.”

-Neumark Salas and Wascher (2014a,b)

1. Local area controls throws away too much useful information
2. Evidence of selection bias is weak
3. Propose a synthetic control inspired matching estimator

Critique of the CWED research

- Not much disagreement that employment effect in the **restaurant sector** is relatively small
 - Neumark, Salas and Wascher (2014) “matching estimator”
 - Totty (2014)
 - Addison, Blackburn and Cotti (2014)
 - Dube, Lester and Reich (2010, 2014)

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Effect of a 10% increase in Minimum Wage:
Earnings change \approx 2%*
Employment change \approx [-0.7%, 0.2%]

Critique of the CWED research

- Not much disagreement that employment effect in the **restaurant sector** is relatively small
- Bigger disagreement – **teens**
 - Shrinking share of minimum wage workers
 - Weight of studies that account for non-random selection find small effects

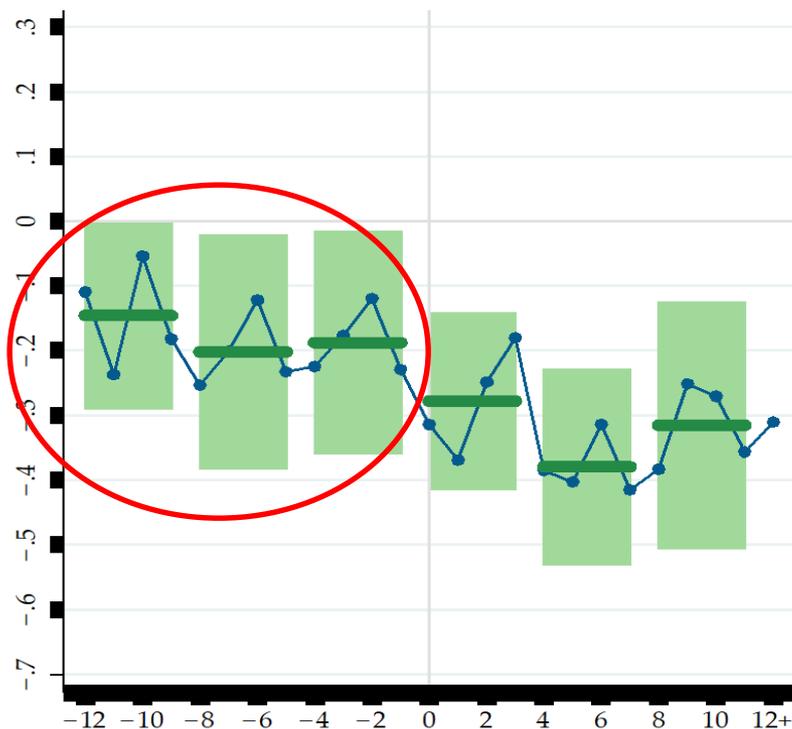
Key elements of NSW Critique

Neumark, Salas, and Wascher (2014a,b) argue:

- 1) no clear evidence of violation of **parallel trends** between states
- 2) no clear evidence that **spatial controls** help reduce pre-existing trends

Falsification Tests – pre-existing trends for teen employment

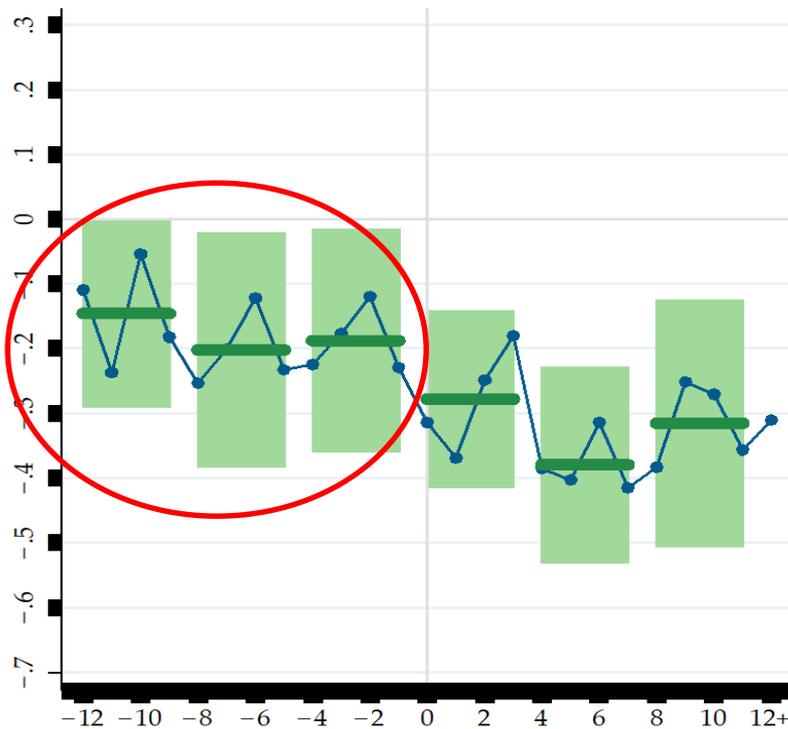
The model assuming parallel trends fails falsification tests



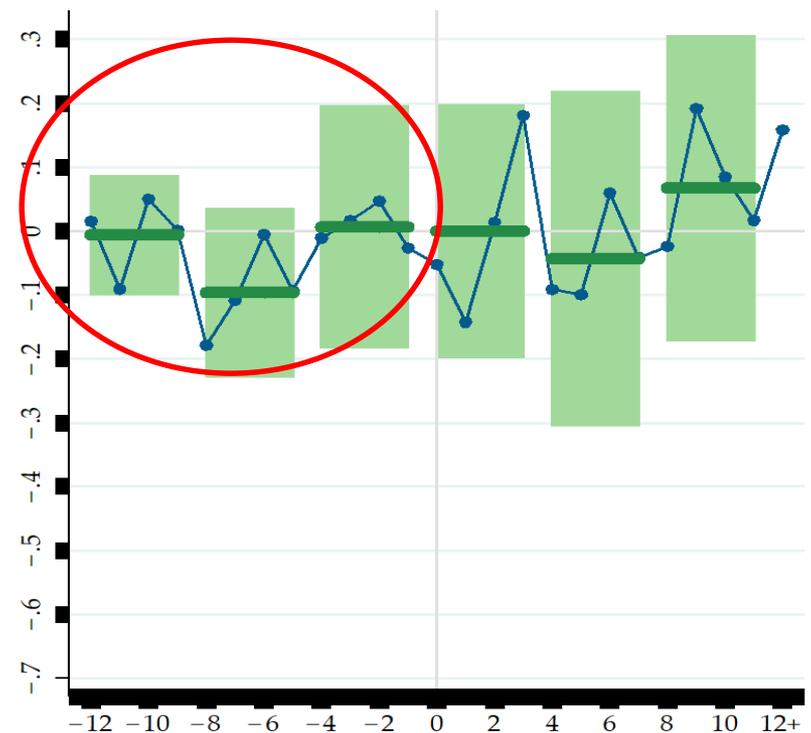
Source: Allegretto, Dube, Reich, Zipperer (2016) analyzing teen employment 1979-2014 using CPS monthly data. Noes: Regional controls include division-period effects, and state linear trends. Event time in quarters in x-axis, and 0 is quarter of minimum wage increase.

Falsification Tests – pre-existing trends for teen employment

The model assuming parallel trends fails falsification tests



... but adding regional and trend controls gets rid of pre-existing trends



Source: Allegretto, Dube, Reich, Zipperer (2017) analyzing teen employment 1979-2014 using CPS monthly data. Notes: Regional controls include division-period effects, and state linear trends. Event time in quarters in x-axis, and 0 is quarter of minimum wage increase.

Are nearby areas better controls?

- Dube Lester Reich (2016): contiguous counties much more similar than other counties on covariates
- Slichter (2016): “selection on observables” rises with distance; nearby areas least different
- Boone, Dube, Goodman, Kaplan (2016)
 - Use of border counties eliminate pre-existing employment trends prior to UI benefit extension during Great Recession

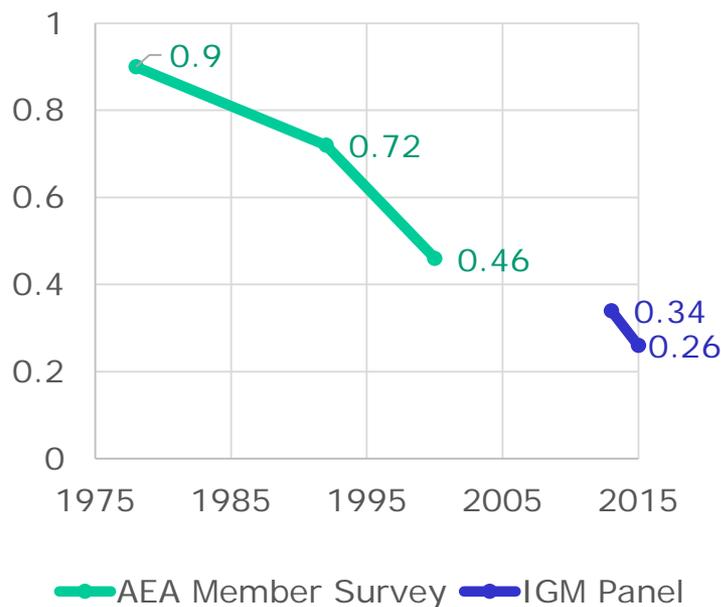
Data-driven control groups

Other data-driven ways of constructing control groups include:

- Dube and Zipperer (2014) use pooled synthetic controls
- Totty (2015) uses an “interactive fixed effects” model
- Both methods:
 - use past patterns (and not geography) to construct control groups
 - find small employment effect for teens
 - differ from “matching estimator” of Neumark Salas and Wascher – which appears to have poorly matched control groups (Allegretto Dube Reich Zipperer 2017)

Changing opinions among economists:

- Do minimum wages substantially lower employment among low-wage workers?



- Analysis of petition signers (O'Neill 2014):
Labor economists, recent PhDs *more* likely to support raising minimum wages

A new generation of minimum wages...and research



Higher minimum wages – what do the evidence show?

- We are at the early stages
- Reich, Allegretto and Godoey (2017) vs. Jardim et al. (2017) on Seattle minimum wage
 - Reich et al. find no effect when looking at restaurant employment
 - Jardim et al. look at jobs under \$19/hour, similar to the approach in Cengiz, Dube, Lindner and Zipperer (2017)
 - But Seattle likely had a positive wage shock, creating a problem for the case study
- Case studies from other cities/states will be very useful: Portland/Oregon, Minneapolis, California, New York, etc.
- Expect to see variety of methods, data

New approaches to estimating overall effect of MW on low-wage workers

- Cengiz (2017) uses **machine learning** (Boosting) to identify low-wage workers
 - Creates a demographically-based low wage group that captures **75%** of likely minimum wage workers
 - Range of specifications: classic two-way FE plus geographic controls, state trends, interactive fixed effects
 - **MW elasticities** with respect to:
 - **Wage** between **0.09 and 0.13**
 - **Employment** between **-0.02 and 0.02**
 - Controversy on specifications (ADRZ, NSW) may have been mostly about teens...not low wage workers generally...!
 - Also finds nearly all of the “job losses” in Meer and West (2016) were for high wage workers who saw no wage gains

Taking stock

- CWED scholarship has helped move the minimum wage research literature, thinking about the impact of the policy.
- A new generation of minimum wage policies is pushing us to come up with further refinements in empirical approaches and new data sources.
- It's an exciting time for minimum wage scholars.