Summary:
Minimum Wage Effects Across State Boundaries

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Dube et al. [2010]

1 Motivation

2 Data Sources and Construction of Samples

2.1 Choice of Industry

- *Restaurants* are chosen as the primary industry for analysis. This is justified because, according to the CPS[1],
  - they employed 29.9% of workers paid within 10% of the state or federal minimum wage in 2006 [2].
  - 33% of restaurant workers earn within 10% of minimum wage.
- Moreover, *accommodation and food services sector* [3], a broader category than restaurants, is also considered.
- *Manufacturing sector* is also chosen as a counterfactual exercise since it includes very few minimum wage workers.

2.2 Data Sources

- Census of Employment and Wages (QCEW) contains Quarterly county-level payroll data submitted by employers to calculate payroll taxes. 98% of workers are covered.
- Based on QCEW, the authors construct county-level panel data of employment and earnings. [4]
- Employment and wage data for restaurants released by BLS at county-level. BLS divides the total payroll in each county by total restaurant employment level.

[1] We can use LFS to do similar exercise.

[2] Year 2006 is the final year of the analysis in this paper. Future-policy wise, the most recent year is probably the most relevant (?).

[3] This probably includes establishments such as hotels as well.

[4] Since data comes at county-level, not establishment-level. If establishment-level data is available, can we use it?

2.3 Sample Construction

Only counties with balanced-panel are selected. Two samples:

1. All counties (AC) sample consists of 1381/3081 counties
2. Contiguous border county-pair (CPBP) sample consists of 504/11139 border counties. This yields 316 county-pairs. 288/316 county-pairs (337/504 counties) had a minimum wage differential at some point in the sample period.

- AC sample and CPBP sample are comparable because they are similar in terms of population, density, employment levels, and average earnings.
- Whether counties have missing data may be correlated with minimum wage increase. This can be checked by regressing dummy for missing observation on minimum wage covariate. The estimate is small, negative, and insignificant.
- Counties with large area may not be really local. We can check robustness by dropping these counties and see whether the estimates are virtually identical.

2.4 Contiguous Border Counties as Controls

- There are substantial minimum wage differences within county pairs.
  - The number of counties that provide variation is sizable.
  - There is substantial pay gap among these counties.
- A county is more similar to its cross-state counterpart than to a randomly chosen county.
  - Look at dynamic responses. Lead terms capturing employment levels behave better when use contiguous county-pairs as controls.

3 Empirical Strategy

3.1 Specification using AC sample

(Conventional) two-way fixed effect model with common period-fixed effect:

$$\ln y_{it} = \alpha + \eta \ln(MW_{it}) + \delta \ln(y_{it}^{TOT}) + \gamma \ln(pop_{it}) + \phi_i + \tau_t + \epsilon_{it} \tag{1}$$

Estimates based on the variation within each census division:

$$\ln y_{it} = \alpha + \eta \ln(MW_{it}) + \delta \ln(y_{it}^{TOT}) + \gamma \ln(pop_{it}) + \phi_i + \tau_{ct} + \epsilon_{it} \tag{2}$$

$$\ln y_{it} = \alpha + \eta \ln(MW_{it}) + \delta \ln(y_{it}^{TOT}) + \gamma \ln(pop_{it}) + \phi_i + \tau_{ct} + \xi_s I_s \cdot t + \epsilon_{it} \tag{3}$$

Estimates based on the variation within each metropolitan area:

$$\ln y_{it} = \alpha + \eta \ln(MW_{it}) + \delta \ln(y_{it}^{TOT}) + \gamma \ln(pop_{it}) + \phi_i + \tau_{mt} + \epsilon_{it} \tag{4}$$

3.2 Specification using CPBP sample

Two-way fixed effect model with common period-fixed effect:

$$\ln y_{ipt} = \alpha + \eta \ln(MW_{it}) + \delta \ln(y_{it}^{TOT}) + \gamma \ln(pop_{it}) + \phi_i + \tau_t + \epsilon_{ipt} \tag{5}$$

Estimates with pair-specific time effects

$$\ln y_{ipt} = \alpha + \eta \ln(MW_{it}) + \delta \ln(y_{it}^{TOT}) + \gamma \ln(pop_{it}) + \phi_i + \tau_{pt} + \epsilon_{ipt} \tag{6}$$

Identifying assumption is that $E(\ln(MW_{it}), \epsilon_{ipt})$, i.e. minimum wage variation within the pair is uncorrelated with the differences in residual employment in both of the county.

References

A. Dube, T. W. Lester, and M. Reich. Minimum wage effects across state borders: Estimates using contiguous counties. *The review of economics and statistics*, 92(4):945–964, 2010.