

Minimum Wages and Rents

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In this note we lay down the main theoretical framework and empirical strategy for the project.

Theoretical Framework

We are interested in the short-run effects of increases in minimum wages on a ZIP code's rental market. Residents in this ZIP code potentially work in some other ZIP code, under a different minimum wage policy. We let $z \in \mathcal{Z}_i$ be workplaces of residents of i , \underline{w}_i be the residence MW and \underline{w}_z the workplace MW. Residents of i meet in a single market to rent square feet, with equilibrium given by

$$\sum_{z \in \mathcal{Z}_i} L_{iz} h_{iz}(r_i, p_i, y_z) = D_i(r_i)$$

where r_i , p_i and y_z are prices of living space (sq. feet), local consumption goods, and income of people working in z . L_{iz} are the (exogenous) number of commuters to z , and $h_{iz}(\cdot)$ are housing demand functions.

Under the assumption that $p_i(\underline{w}_i)$ and $y_z(\underline{w}_z)$, both increasing, we can write a change in the log of rents as

$$\Delta \ln r_i = \gamma_i \Delta \ln \underline{w}_i + \beta_i \sum_z \pi_{iz} \Delta \ln \underline{w}_z$$

where β_i and γ_i are parameters that depend on elasticities, and $\pi_{iz} = L_{iz}/L_i$ are commuting shares. It turns out that, if $\partial h_{iz}/\partial p_i < 0$, $\partial h_{iz}/\partial y_z > 0$, and the elasticity of housing demand to income doesn't vary by z , then $\gamma_i < 0$ and $\beta_i > 0$.

As a result of this exercise, we expect workplace and residence MW changes to have different impacts on rental prices.

Data

Our most important data sources are:

- Unbalanced panel of ZIP codes with median rents in SFCC category from Zillow, at a monthly frequency, until December 2019.
- Balanced panel of binding minimum wages in each ZIP code.
- Origin-destination matrix of commuting shares between pairs of ZIP codes constructed from LODES for each year between 2009 and 2018.

We use this data to compute the “experienced log minimum wage” for each ZIP code $\underline{w}_{it}^{exp} = \sum_{z \in \mathcal{Z}_i} \pi_{iz} \ln \underline{w}_z$. Figure 1 illustrates using the New York–New Jersey metro area, where there were increases of the MW in New York City and New York State.

Empirical Approach

We are interested in models of the form

$$\ln r_{it} = \alpha_i + \tilde{\delta}_t + \gamma \ln \underline{w}_i + \beta \underline{w}_{it}^{exp} + \epsilon_{it}$$

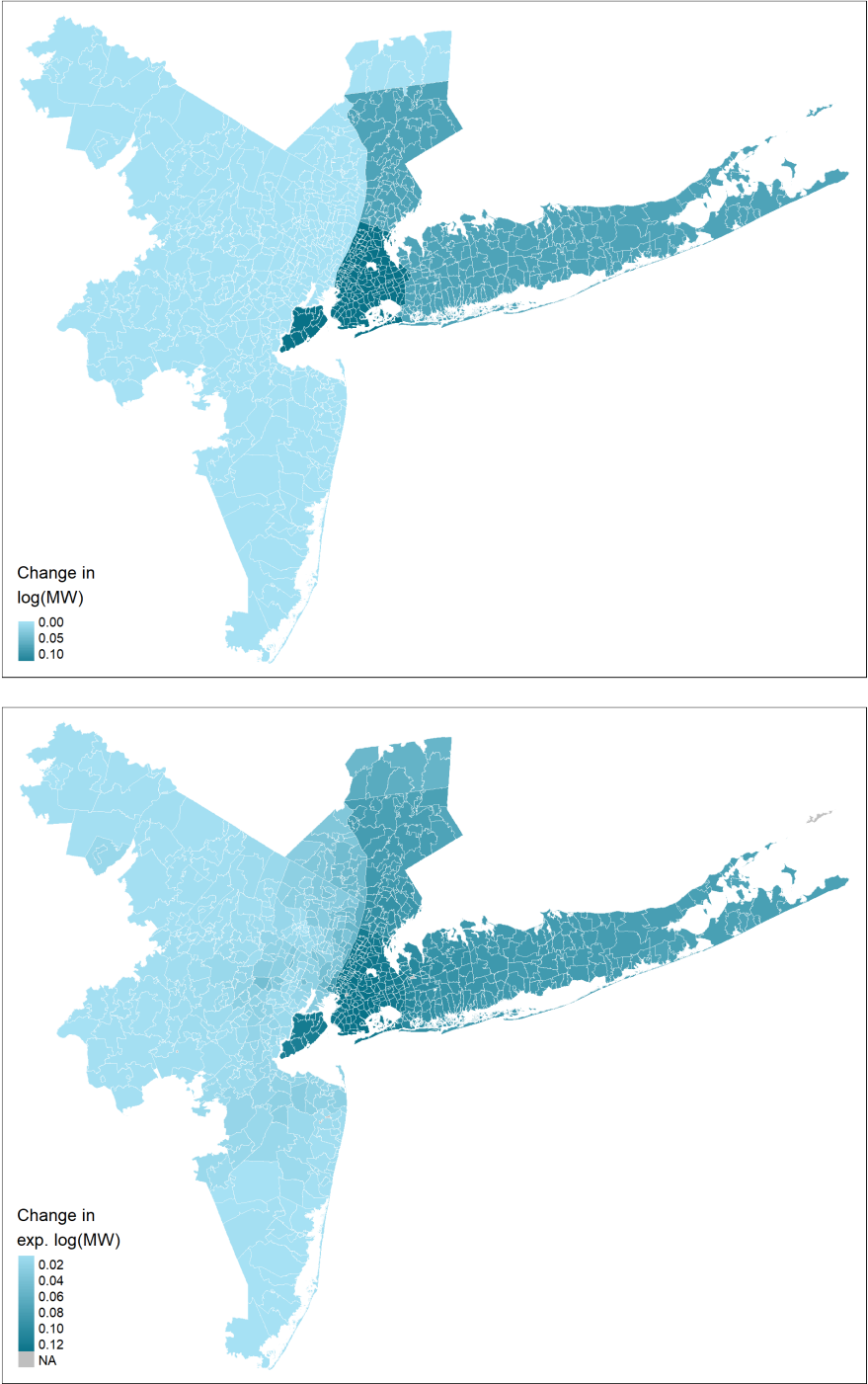
where i is ZIP code and t is monthly data. We sometimes include more time-varying covariates or allow time effects to vary by some wider geography (state, CBSA). Taking first differences, we get:

$$\Delta \ln r_{it} = \delta_t + \gamma \Delta \ln \underline{w}_i + \beta \Delta \underline{w}_{it}^{exp} + \Delta \epsilon_{it}$$

where $\tilde{\delta}_t = \delta_t - \delta_{t-1}$. We use a first-differenced specification because we detected significant correlation of rents over time.

We estimate this model under an unbalanced, partially balanced and fully balanced panels of the Zillow rents data and we consistently obtain negative estimates for γ and positive ones for β . Finally, once we have our model, we are interested in estimating

Figure 1: Actual and Experienced MW changes between December 2018 and January 2019 in the New York metro area



Source: World Bank

ZIP code-specific MW to rents pass-through coefficients for a counterfactual increase in the federal minimum wage (using ZIP code-month IRS data on income).

Our questions are:

1. Does the FE estimator correctly identifies the causal γ and β parameters?
2. Should we implement an alternative estimation approach where we restrict the units we use as controls for each treatment? As we are interested in two variables, not obvious what the best units are. We thought of a stacking method as in Cegniz et al (2019), or the imputation method in Borusyak et al (2021).
3. Should we focus the problem from the perspective of accounting for spillovers, *a la* Butts (2021), where we aim at estimating the effect of same-unit MW only? Again, we find it more appealing from an economic theory perspective to estimate the effect of both workplace and residence MW changes.

References

- Borusyak, Kirill, Xavier Jaravel, and Jann Spiess 2021. Revisiting Event Study Designs: Robust and Efficient Estimation.
- Butts, Kyle 2021. Difference-in-Differences Estimation with Spatial Spillovers.
- Cegniz, Doruk, Arindrajit Dube, Attila Lindner, and Ben Zipperer 2019. The Effect of Minimum Wages on Low-Wage Jobs.