U.S. Regulatory Delays in Construction Across Time

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Introduction

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  - Stakes: Glaeser and Gyourko (2018), Klein and Thompson (2025) (e.g.)

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- Causes and consequences of regulatory constraints on building?
  - Stakes: Glaeser and Gyourko (2018), Klein and Thompson (2025) (e.g.)
- Today: test political drivers using permits from 100+ cities, 2000-22
- Key measures:
  - Average annual delays d_{it} (permit issuance - filing) for new residential construction
  - City council election indicators 1_{it} and electoral competition VS_{it} measured as the mean vote margin of winners over the runner-up (in SD)

Methodology

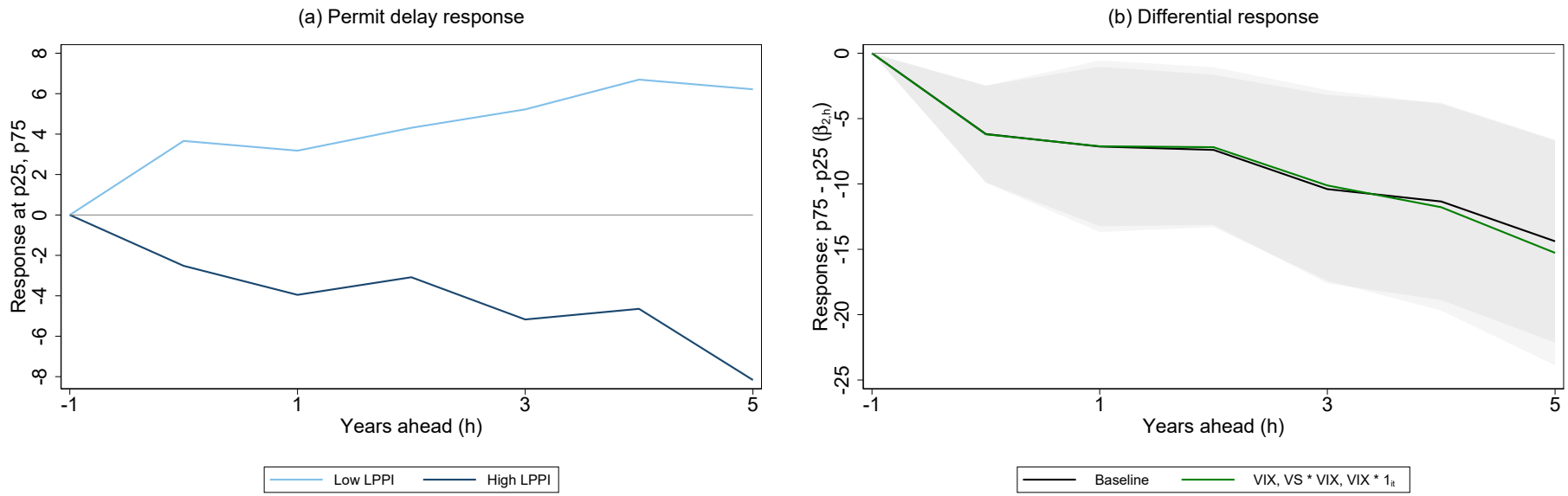
- Influence of local politics on permit delays
  - *In high council-discretion cities*, electoral competition $\rightarrow$ delays
  - Unrelated to supply-side? Competition $\rightarrow$ salience?
- Affordability consequences of delay/regulatory shocks
  - Delay shocks correlated with macro outlook, housing demand
  - Use only supply-side variation with competition $\times$ discretion IV
  - Instrumented delay shocks significantly raise house prices

Response of permit delays to electoral competition, *by city council discretion*

Note: I estimate

$$\Delta d_{i,t+h} = \alpha_{h,i} + \beta_{1,h} E_{it} + \beta_{2,h}(E_{it} \times LPPI_i^*) + \gamma' C_{it} + \Gamma'_{h,l} L\left(\Delta d_{it}, E_{it}, E_{it} \times LPPI_i^*, C_{it}\right) + \xi_{i,t+h}, \tag{1}$$

for $h = 0, \ldots, 5$, where $E_{it} = VS_{it} \times 1_{it}$, $LPPI_i^* = (LPPI_i - LPPI_{25})/(LPPI_{75} - LPPI_{25})$, and $C_{it} = (1_{it}, 1_{it} \times LPPI_i^*)'$. The green line in panel (b) plots $\beta_{2,h}$ with controls for VIX_t, $E_{it} \times VIX_t$, $1_{it} \times VIX_t$, and their lags. SEs are clustered by city and year.

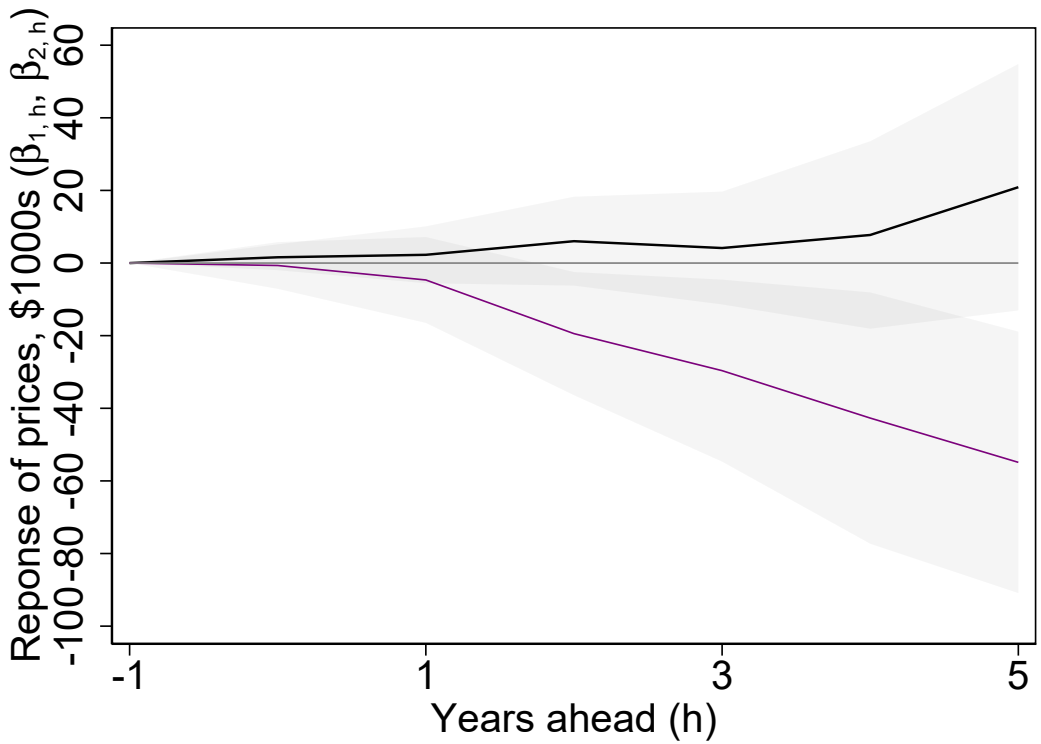


Reduced form of LP-IV: Prices on electoral competition, by LPPI

Note: I estimate

$$\Delta p_{i,t+h} = \alpha_{h,i} + \beta_{1,h} E_{it} + \beta_{2,h}(E_{it} \times LPPI_i^*) + \gamma' C_{it} + \Gamma'_{h,l} L\left(\Delta p_{it}, E_{it}, E_{it} \times LPPI_i^*, C_{it}\right) + \xi_{i,t+h} \tag{2}$$

for $h = 0, ..., 5$, plotting $\beta_{1,h}$ in black and $\beta_{2,h}$ in purple. SEs clustered by city and year.

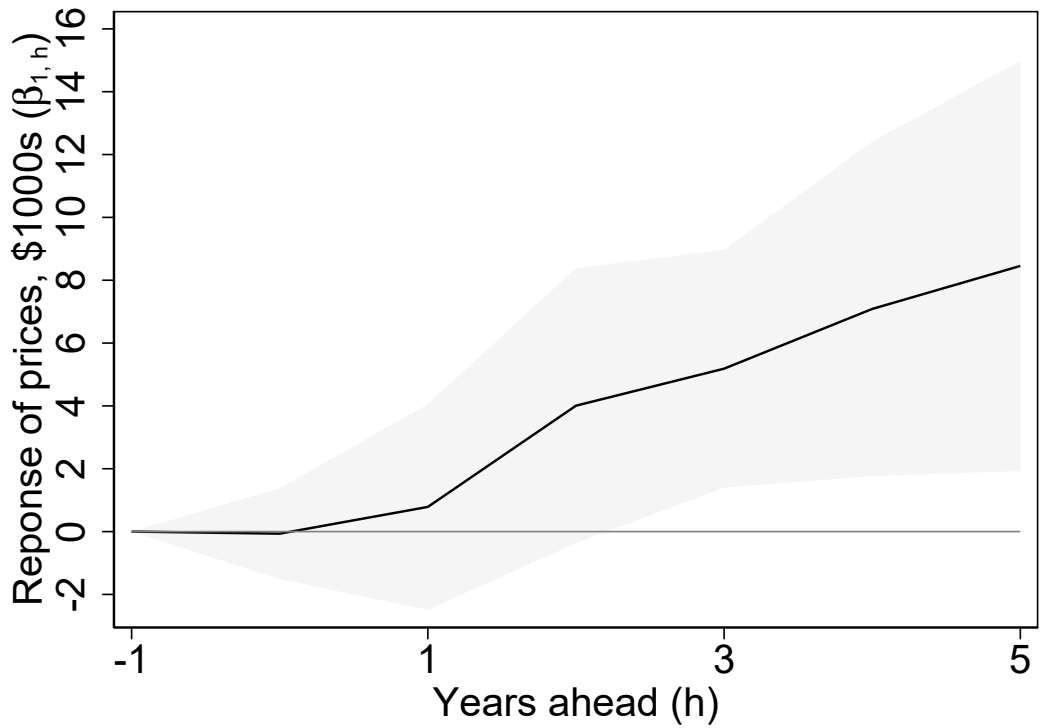


IRF of house prices to instrumented delay shocks

Note: I estimate

$$\Delta p_{i,t+h} = \alpha_{h,i} + \beta_{1,h} d_{i,t} + \gamma' C_{it} + \Gamma'_{h,l} L\left(\Delta p_{it}, d_{it}, C_{it}, E_{it} \times LPPI_i^*\right) + \xi_{i,t+h}, \tag{3}$$

for $h = 0, ..., 5$, where $\Delta p_{i,t+h} = p_{i,t+h} - p_{i,t-1}$ is changes in house prices. Delays d_{it} are instrumented with $E_{it} \times LPPI_i^*$; $C_{it} = (E_{it}, 1_{it}, 1_{it} \times LPPI_i^*)'$. KP Wald F-stats range from 5.7 ($h = 1$) to 12.1 ($h = 5$). SEs are clustered by city and year.



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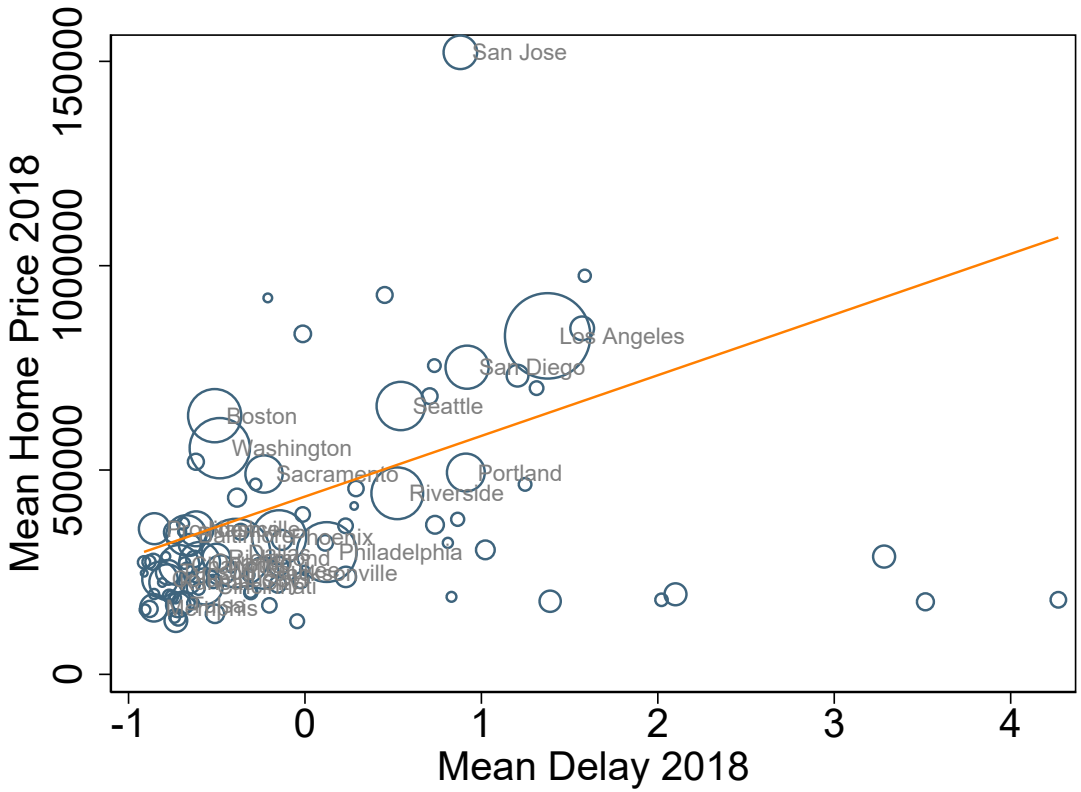
Appendix

- OLS Cross-sectional prices on delays
- OLS prices on delays, controls
- Noncontemporaneous delays, home prices in cross-section
- OLS LP of prices on delays
- Controls for VIX in delays $\rightarrow$ prices LPs
- Robustness: additional lag
- Completion time distribution
- Average delays over time

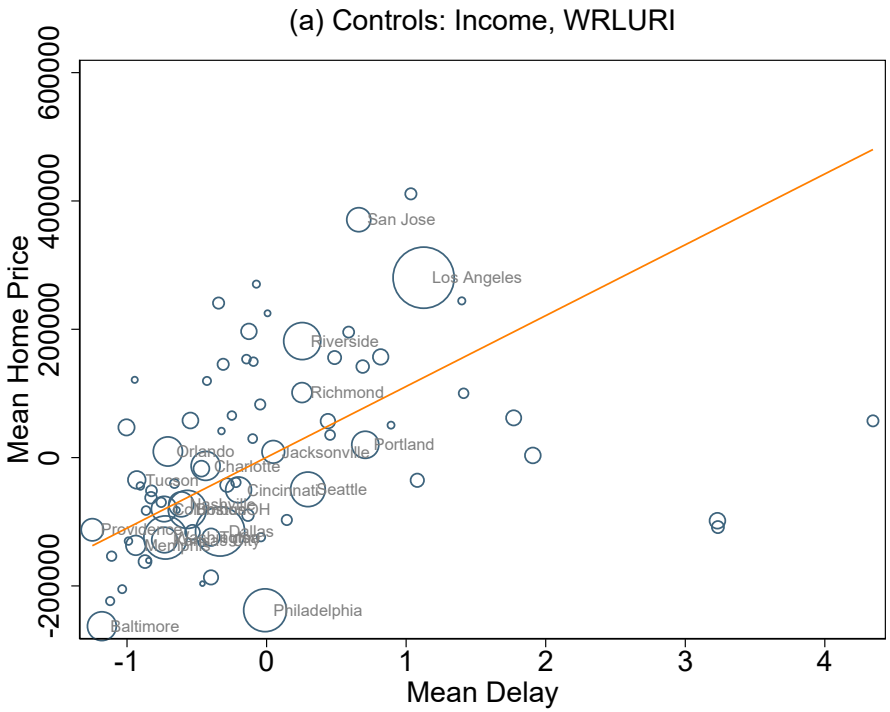
Single-variable OLS: Mean home price on mean delay

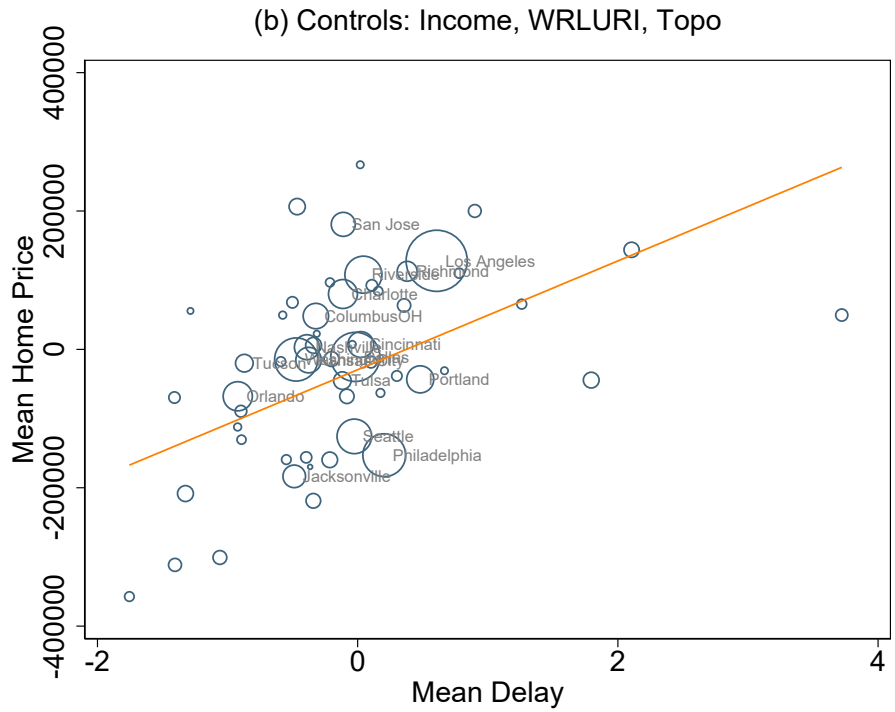
Note: Blue circles are a scatter of home prices on delays (cross-sectional z-scores).



Cross-sectional: Correlation between delays (z-scores) and house prices, 2018

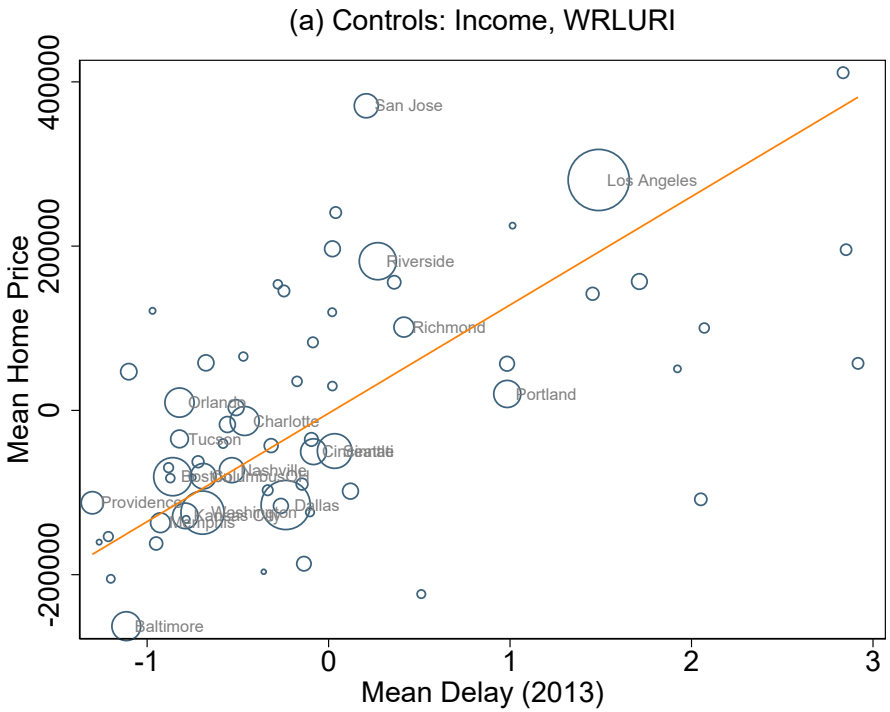
Note: Blue circles are residuals from regressing home prices and delays (cross-sectional z-scores) on controls.

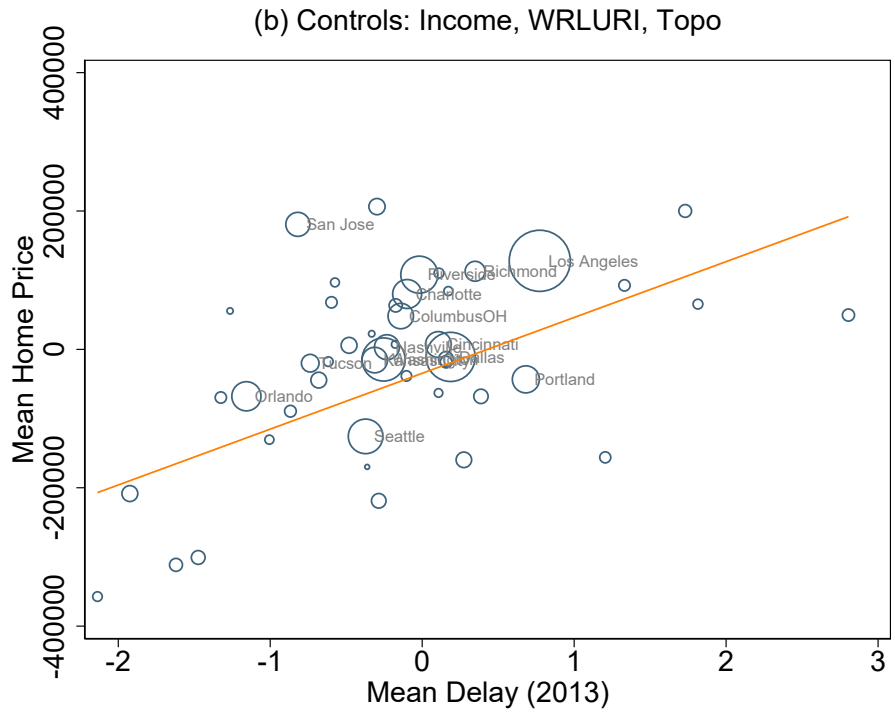




Using 5-year lagged delays in cross-section

Note: Blue circles are residuals from regressing home prices and delays (cross-sectional z-scores) on controls.



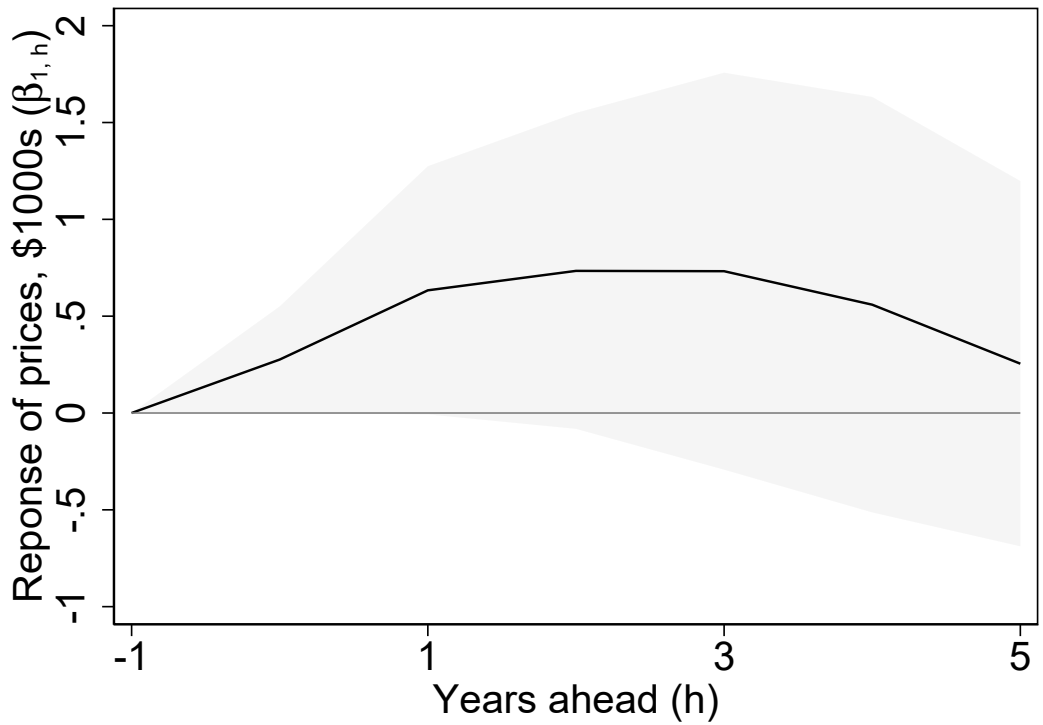


LP of prices on delays: OLS

Note: I estimate

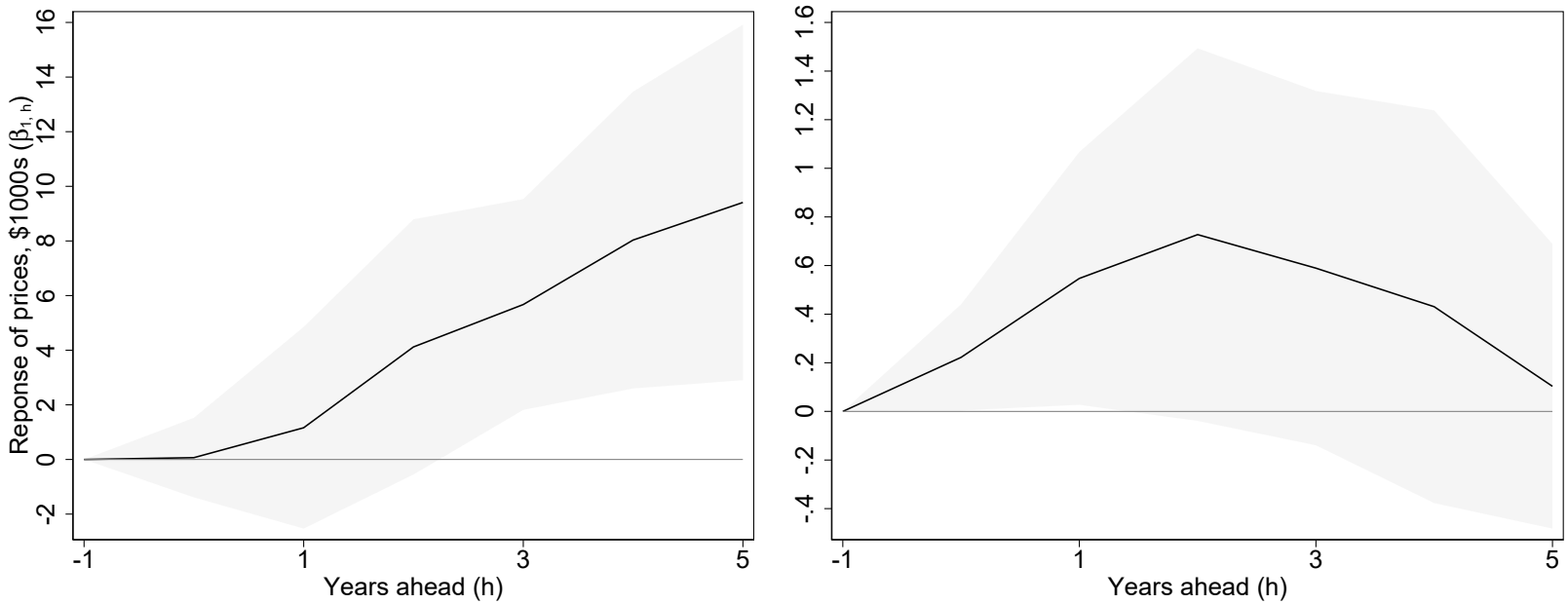
$$\Delta p_{i,t+h} = \alpha_{h,i} + \beta_{1,h} d_{it} + \Gamma'_{h,l} L(\Delta p_{it}, d_{it}) + \xi_{i,t+h} \tag{4}$$

for $h = 0, ..., 5$. SEs are clustered by city and year.



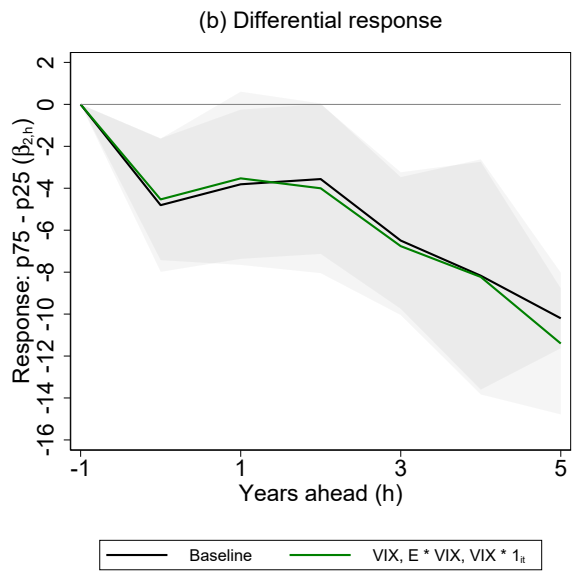
LP of prices on delays: IV and OLS with VIX, interaction control

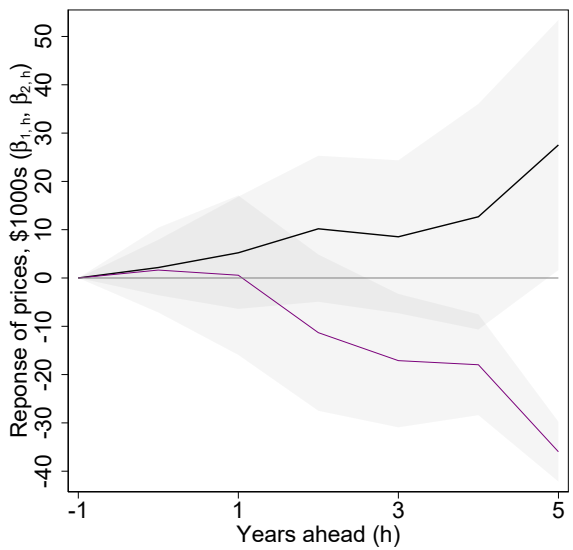
Note: Panel (a) plots the instrumented IRF of house prices to delays (equation 3) with additional controls for VIX_t and $d_{it} * VIX_t$. Panel (b) plots the IRF estimated from OLS (equation 4) with the same additional controls. SEs clustered by city and year.

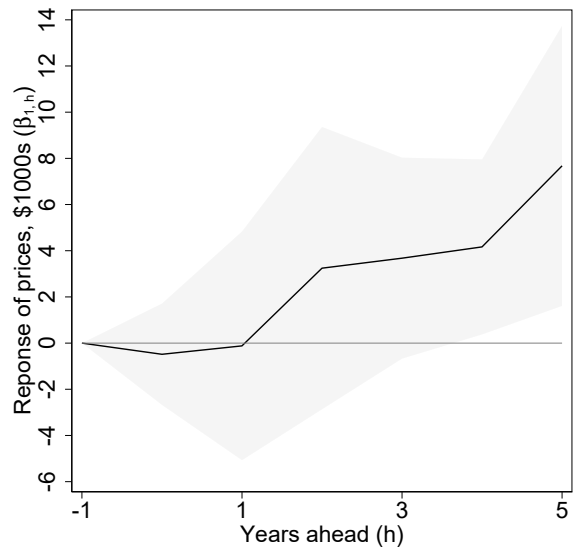


Robustness: Control for additional lags

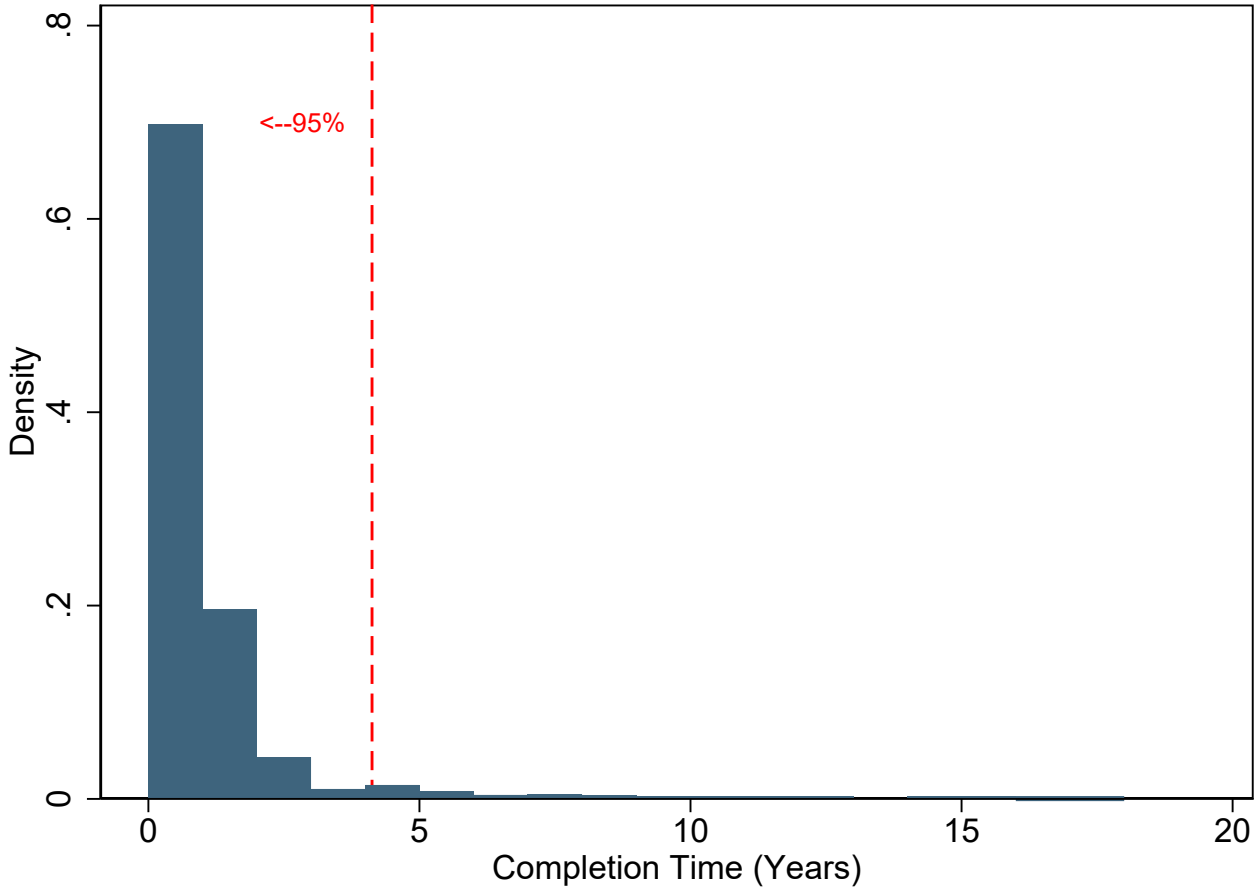
Note: Plots estimation of equations 1, 2, and 3 with two lags as controls.



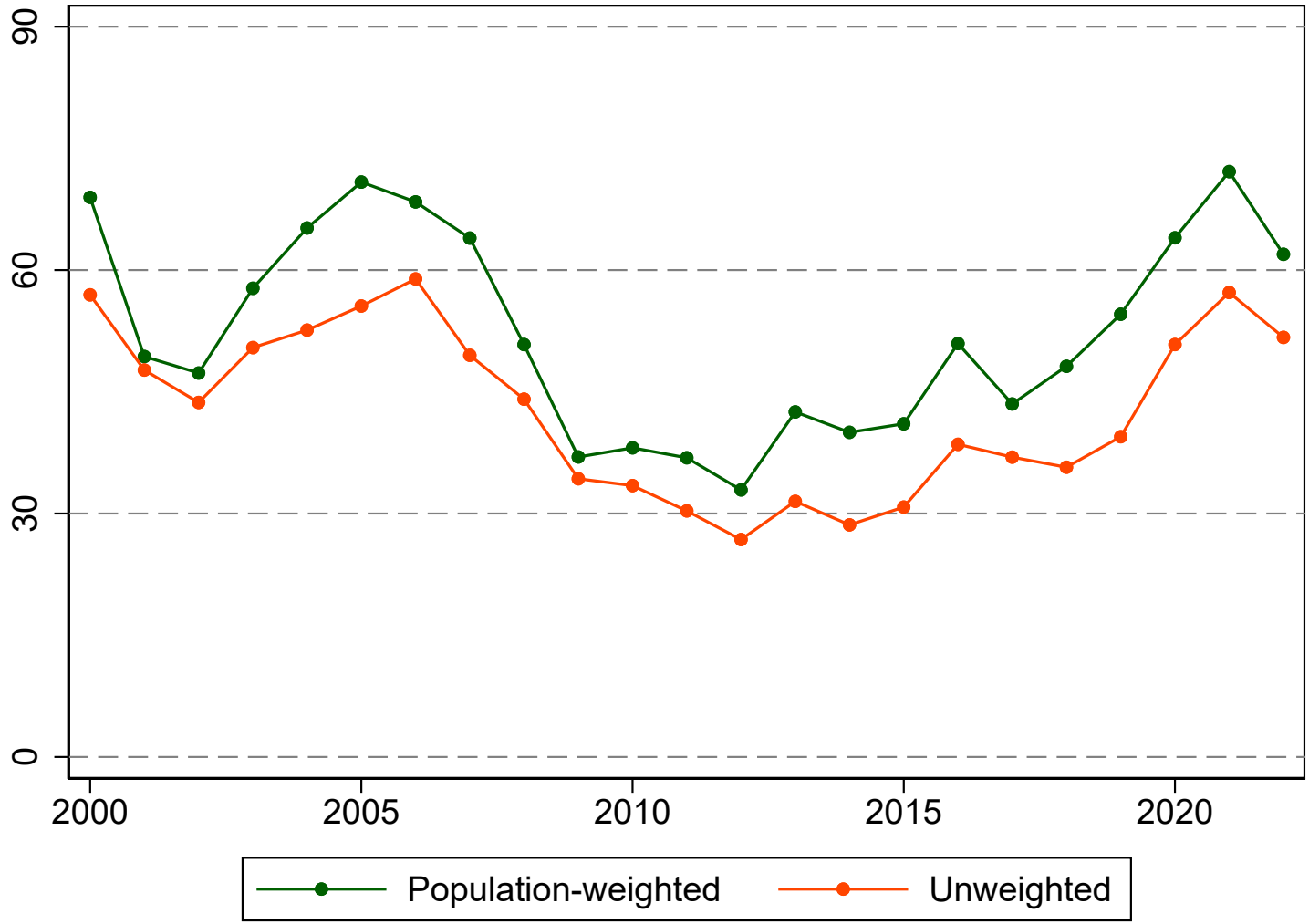




Completion time distribution (including permitting)



Visualizing delays: Average delays in large (1m+) cities



Related literature

- Popular press:
  - Stuck* (Appelbaum, 2025),
  - Abundance* (Klein and Thompson, 2025)
- Academic:
  - Evidence from pull-forward effects in LA* (Gabriel and Kung, 2025)
  - Land-use regulation survey (Gyourko et al., 2021); Productivity consequences* (Garcia and Molloy, 2025)
  - Declining U.S. construction TFP (Goolsbee and Syverson, 2023); Direct building costs uncorrelated with prices (Potter and Syverson, 2025)
  - (Glaeser and Gyourko, 2002), (Glaeser et al., 2005), (Glaeser et al., 2006), (Quigley and Raphael, 2005), (Saiz, 2010): land-use regs, geography
  - Local electoral competition influences land supply in Spain; homeownership intensifies* (Solé-Ollé and Viladecans-Marsal, 2012)

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