The Effect of Land Supply for New Homes on Residential Investment and House Prices.

Justin Katz (Harvard University and Boston Fed)
Paul S. Willen (Boston Fed and NBER)

In the US, there is significant policy concern about rising house prices relative to income, a low supply of new housing units, and flat-to-negative construction productivity growth (Molloy 2020, Syverson and Goolsbee 2023, Garcia and Molloy 2023). A large body of existing research attributes these trends to land use restrictions that limit new supply (e.g. Gyourko and Malloy 2015, Glaeser and Gyourko 2018, D'Amico et al 2024). An alternative, less-studied hypothesis is that scarcity of vacant land available for development constrains the level and efficiency of new construction, consistent with some patterns in "superstar" cities (Duranton and Puga 2023). This mechanism implies that reforming land use restrictions alone may be insufficient to address housing supply constraints. Little comprehensive research exists on this alternative explanation, despite its importance to evaluating housing policy (Duranton and Baum-Snow 2025).

This paper fills the gap by providing theory and evidence to study the effects of the distribution of available land on housing supply. In high-cost areas, the supply of land for new construction is fragmented across many small, disjointed parcels. This limits the scale and efficiency of new construction, raising the cost of development and making it less responsive to economic fluctuations. While fragmented land supply could result from population density or past land use restrictions, it implies a limitation on efficient construction not easily undone with regulatory reform.

We first present a simple model of housing supply where builders decide whether to develop parcels of variable size. Builders face a fixed development cost to prepare an individually-owned parcel for construction, so that larger parcels develop at a lower price per housing unit. This implies increasing returns to scale at the parcel level, and connects the size distribution of available parcels to aggregate productivity. The theory implies that holding fixed total land supply and returns to development, housing supply falls with average parcel size.

To evaluate the predictions of our theory, we build a new dataset that links developable land in New England with new construction activity from 2008-present. The dataset combines parcel-level transaction and assessor records from the Warren Group and CoreLogic. We use the dataset to track parcel

development across different categories, including vacant land zoned for residential development, single and multi-family residential properties, and various types of non-residential land.

The dataset allows us to document new facts about the distribution of vacant parcels zoned for residential development in high-cost housing markets. First, vacant residential parcels are considerably smaller than non-residential parcels and have a more compressed distribution. This demonstrates that large parcels for residential development are scarce. Second, the parcel size distribution is relatively constant from 2008-present, although the right tail of especially large plots has fallen in some geographies. Third, larger vacant parcels are relatively more likely to be developed into either single-family or multi-family units, suggesting that builders develop larger parcels more efficiently. Fourth, vacant parcels are larger relative to developed residential parcels in areas with lower population density. This is consistent with high population density creating challenges to more efficiently combining vacant plots.

To directly evaluate increasing returns to scale in parcel size, we estimate our model using a panel of land development aggregated at the local housing market level. Residential development has increasing returns in parcel size if increasing vacant parcel size increases development rates, conditional on the returns to construction. Preliminary estimates demonstrate increasing returns: a 50% increase in parcel size would increase development rates by 40%. This estimate may be biased due to unobserved demand shocks that both speed development and lead builders to increase supply by endogenously combining adjacent parcels. We address this identification challenge with several new instruments. One instrument exploits changes in the tax rates on agricultural land, which provides much of the property for greenfield development in New England. Agricultural land typically receives a tax subsidy that discourages non-agricultural uses. Tax changes affect this relative subsidy and hence land available for development. A second instrument uses quasi-random events, such as owner deaths, fires, or other disasters, that lead multiple adjacent parcels to go up for sale at the same time. This affects the cost of increasing parcel size, and hence exogenously expands parcel fragmentation.

We use the estimated model to study residential construction productivity and equilibrium house prices under counterfactual vacant parcel size distributions. By quantifying the return to fully “defragmenting” existing land available for development, we illustrate the costs of path dependence that produces fragmented parcels. By simulating the effects of combining contiguous residential vacant lots or rezoning large properties for residential development, we study potential benefits of policies to encourage development on larger parcels.

Disclosure statement: Katz gratefully acknowledges support from The Institute of Consumer Money Management (ICMM) Pre-doctoral Fellowship on Consumer Financial Management, awarded through the NBER. The views expressed in this paper are solely those of the authors and not necessarily those of the Federal Reserve Bank of Boston, the Federal Reserve Board, nor the Federal Reserve System.

References.

Baum-Snow, Nathaniel and Gilles Duranton. "Housing Supply and Housing Affordability." *Handbook of Regional and Urban Economics (forthcoming)*, 2025.

D'Amico, Leonardo, et al. *Why Has Construction Productivity Stagnated? The Role of Land-Use Regulation*. No. w33188. National Bureau of Economic Research, 2024.

Duranton, Gilles, and Diego Puga. "Urban growth and its aggregate implications." *Econometrica* 91.6 (2023): 2219-2259.

Garcia, Daniel, and Raven Molloy. "Can Measurement Error Explain Slow Productivity Growth in Construction?." (2023).

Glaeser, Edward, and Joseph Gyourko. "The economic implications of housing supply." *Journal of economic perspectives* 32.1 (2018): 3-30.

Goolsbee, Austan, and Chad Syverson. *The strange and awful path of productivity in the US construction sector*. No. w30845. National Bureau of Economic Research, 2023.

Gyourko, Joseph, and Raven Molloy. "Regulation and housing supply." *Handbook of regional and urban economics*. Vol. 5. Elsevier, 2015. 1289-1337.

Molloy, Raven. "The effect of housing supply regulation on housing affordability: A review." *Regional science and urban economics* 80.100 (2020): 1-5